Mighty Maths

for 8 - 10 year olds

Master Mathematician

BOOK 2

More Accomplishments With Mathematics

Kim Freeman

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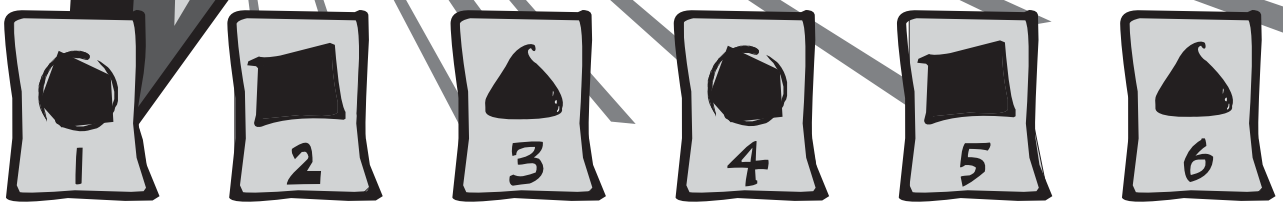

More Accomplishments

With

Mathematics

Kim Freeman

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HOW CAN YOU HELP YOUR CHILD IN MATHEMATICS?

As you progress through the school years, mathematics becomes slightly more complex but even more fascinating. There are many new concepts to learn, however being able to master the basics is still the key to developing confidence and being able to progress further.

This orange Mighty Maths series, Master Mathematician, introduces a number of new concepts such as adding and subtracting larger numbers, arithmetic order of operation and integers. Other topics such as number, decimals and fractions are expanded upon. The work is progressively more challenging and new concepts are introduced in each book at various points.

To help reinforce mathematical skills as well as to maintain motivation, the same type of question is asked in different ways and contexts. Don't worry if your child cannot understand one of the concepts. Quite often that same concept will be introduced in a different way later on in the book. If your child becomes comfortable with a particular way of solving a problem then let them carry on using this method.

A common question that is asked of mathematics teachers is whether a child should use a calculator at this stage of their learning. It is important that they learn and understand each basic concept and the underlying principles. Once that is achieved then there is a case for using the calculator so that they can further explore ways of solving the same problem and therefore increasing their understanding a lot quicker.

This specific book covers number place value and relationships, fractions and decimals, graphs and handling data, perimeter and area, money calculations, angles, multiplication strategies, division and averages.

For best results:

- Go over the pages that your child will work on and familiarise yourself with the exercises. Make sure your children understand the different concepts. Try and explain what is happening on each of the pages.

- Encourage your children to write neatly. Many errors in solving mathematics problems can be traced back to sloppy number writing.

- Provide help immediately when needed. Mathematics is a subject in which everything builds upon what has been previously learned. For example, a failure to understand fractions and decimals will lead to problems later with percentages.

We hope that you and your children have fun with Mighty Maths. At Mahobe, we certainly had fun putting it all together and trialling it with 8-10 year olds.

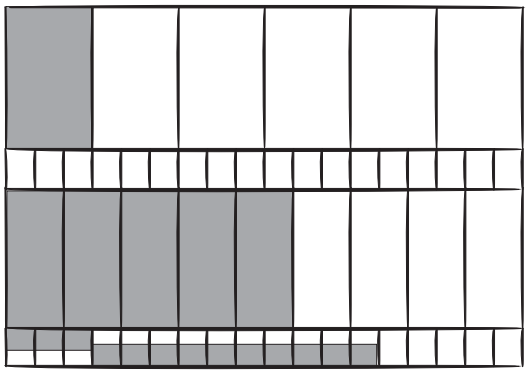
What is found in this book?

In this book you look at:

NUMBER RELATIONSHIPS

$2415 = 2\times1000 + 4\times100 + 1\times10 + 5\times1$

FRACTIONS AND DECIMALS



$$\begin{array}{r} 10{\cdot}52 \\ +\ 3{\cdot}79 \\ \hline 14{\cdot}31 \end{array}$$

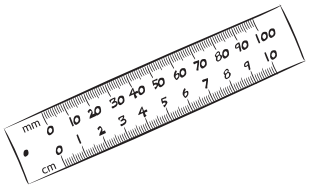
$\frac{2}{100} + \frac{9}{100} = \frac{11}{100}$ or $\frac{1}{10} + \frac{1}{100}$

$\frac{5}{10} + \frac{7}{10} + \frac{1}{10} = \frac{13}{10}$ or $1\frac{3}{10}$

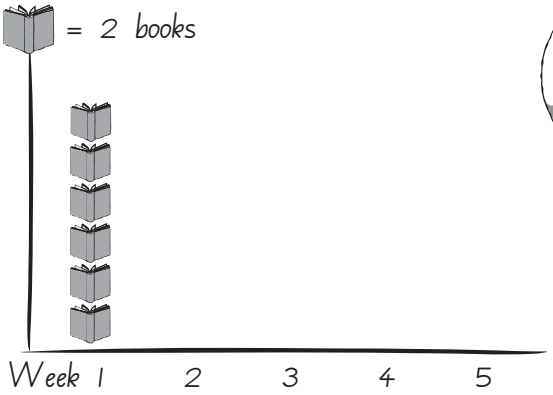
$0 + 3 + 1 = 4$

$10 + 0 = 10$

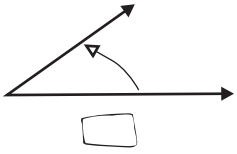
MEASUREMENT



DATA AND GRAPHS



ANGLES

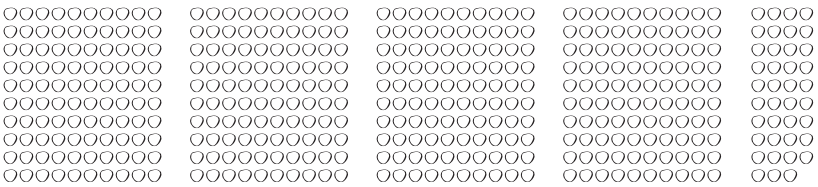


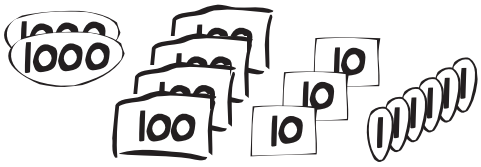
MULTIPLICATION

$$\begin{array}{r} 63 \\ \times\ 26 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

PLACE VALUE

Write each as digits in the place-value table.

a. 

b. 

c. Five thousand, nine hundred and twenty seven.

d. 9 x 1000 + 3 x 100 + 2 x 1

e. 27 hundreds + 7 tens + 3 units

	TH	H	T	U
a.				
b.				
c.				
d.				
e.				

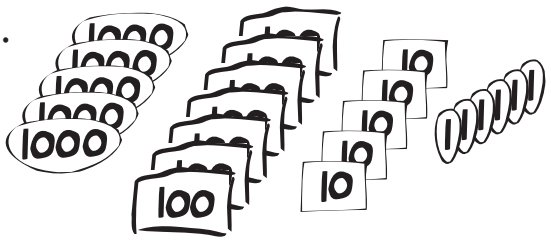
Write these numbers as digits and list them in decreasing order: one thousand two hundred and eighteen, four hundred and six, eighty nine, five hundred and thirty, two thousand four hundred and forty four.

Write these as numbers.	
$3\times1000+8\times100+6\times10=3860$	$4000+50=$
$5\times100+7\times10=$	$900+3=$
$1\times1000+4\times10=$	$1000+300+4=$
$2\times1000+9\times1=$	$6000+40=$
$9\times1000+2\times100=$	$3000+600+1=$
	$2000+70+1=$

PLACE VALUE

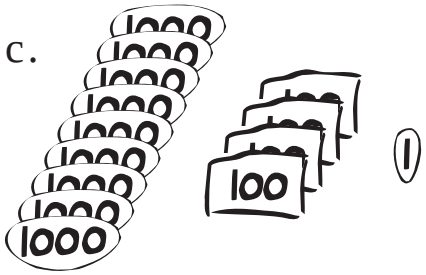
Write each as digits in the place-value table.

a.



b.

c.



	TH	H	T	U
a.				
b.				
c.				

Write these numbers with words.

4027 _____

6103 _____

1009 _____

8531 _____

Write these as expanded numbers.

2415 = 2×1000 + 4×100 + 1×10 + 5×1

3284 =

5500 =

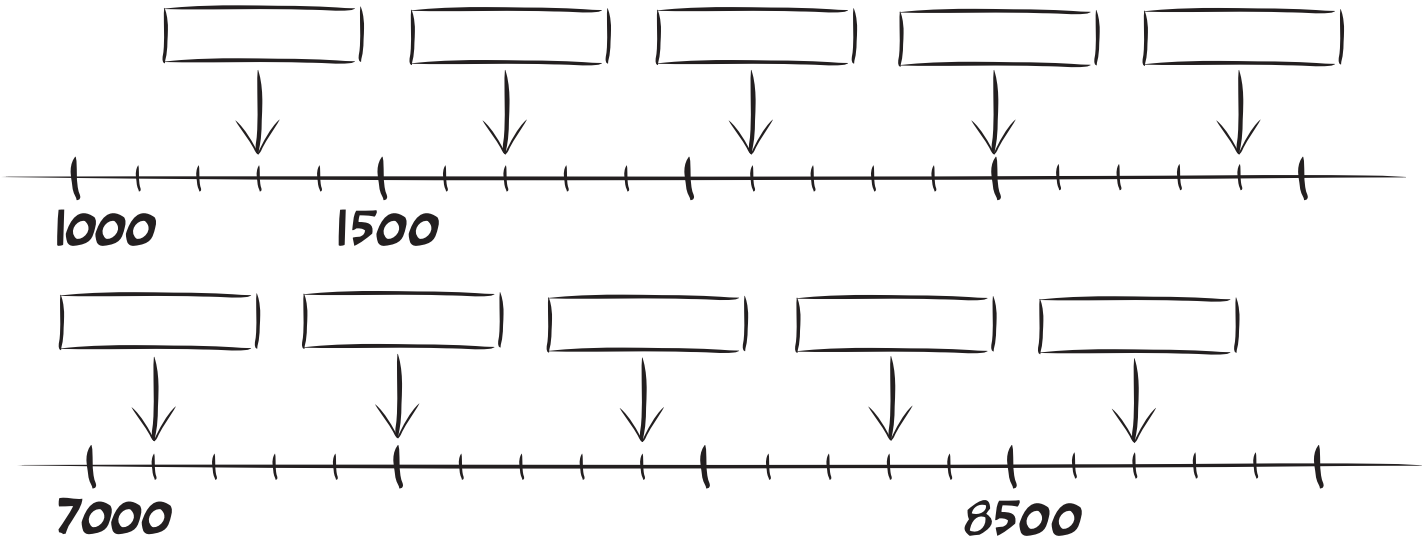
962 =

1721 =

4059 =

NUMBERS

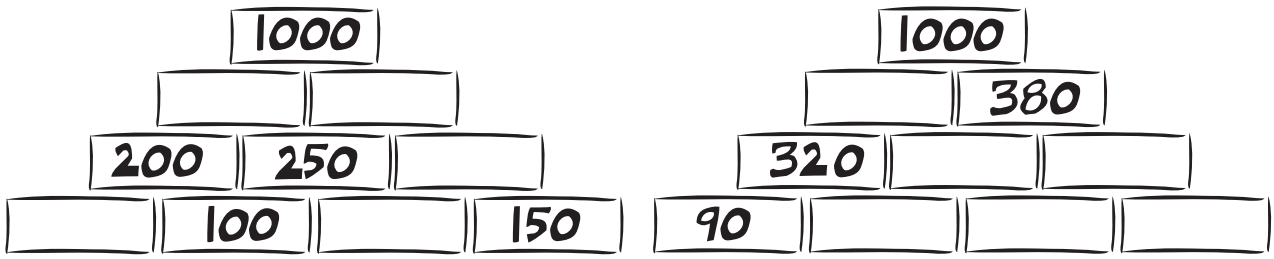
Write the number that is represented at the arrow point.



Round the numbers.

Number	Rounded to the nearest: ten	hundred	thousand
3			
26			
599			
573			
9851			
1090			
2008			

Complete the number pyramid.
The sum of any two numbers is the number directly above.



NUMBER RELATIONSHIPS

Do the additions and subtractions. Look for the relationships.

$25 + 35 =$
$125 + 35 =$
$525 + 35 =$
$825 + 35 =$

$76 - 40 =$
$176 - 40 =$
$476 - 40 =$
$976 - 40 =$

Calculate the products. Look for the relationships.

$6 \times 5 =$	$60 \times 5 =$	$6 \times 50 =$	$60 \times 50 =$
$3 \times 7 =$	$30 \times 7 =$	$3 \times 70 =$	$30 \times 70 =$
$8 \times 8 =$	$80 \times 8 =$	$8 \times 80 =$	$80 \times 80 =$
$4 \times 9 =$	$40 \times 9 =$	$4 \times 90 =$	$40 \times 90 =$

Calculate the products. Look for the relationships.

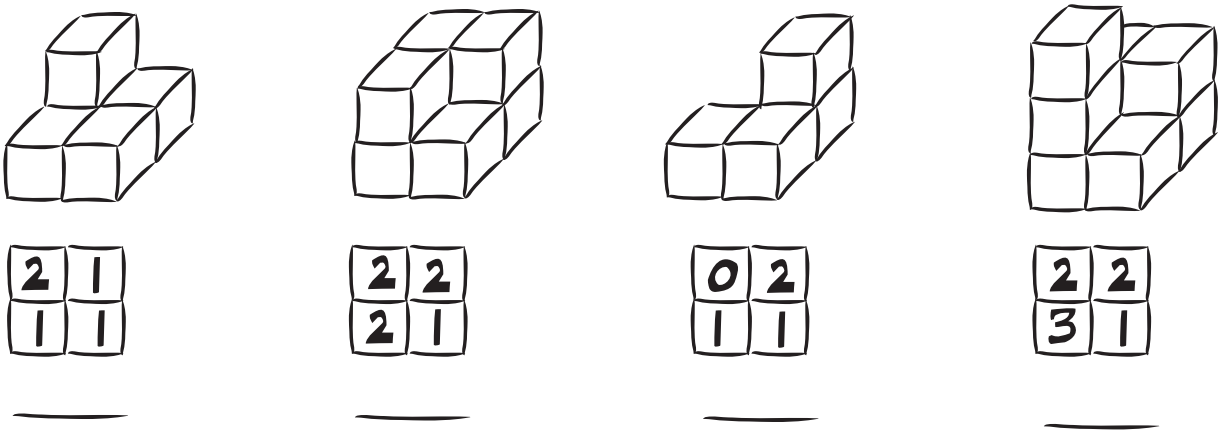
$5 \times 100 =$	$100 \times 8 =$	$200 \times 6 =$
$5 \times 40 =$	$30 \times 8 =$	$80 \times 6 =$
$5 \times 140 =$	$130 \times 8 =$	$280 \times 6 =$
$4 \times 12 =$	$3 \times 13 =$	$7 \times 12 =$
$4 \times 120 =$	$3 \times 130 =$	$7 \times 120 =$
$40 \times 12 =$	$30 \times 13 =$	$70 \times 12 =$

Study the pattern. What would the shape be on the 100th card?

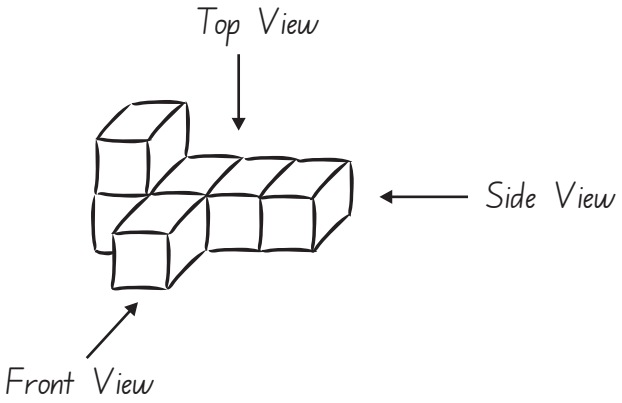
_____

UNIT CUBES

How many unit cubes make up each shape?



Draw how this solid would appear from three different views.



Top View

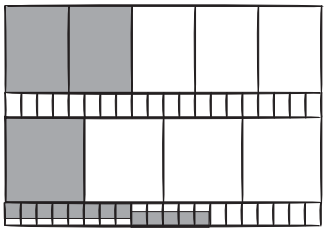
Side View

Front View

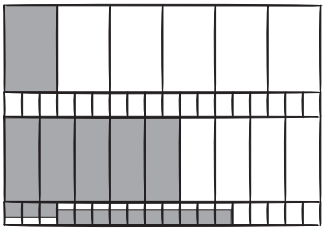
ADDING FRACTIONS

Add the fractions on this page.
Before adding make sure each fraction has the same denominator.

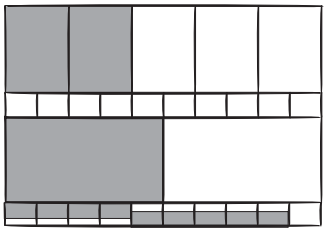
$\frac{2}{5} + \frac{1}{4} = \frac{8}{20} + \frac{5}{20}$



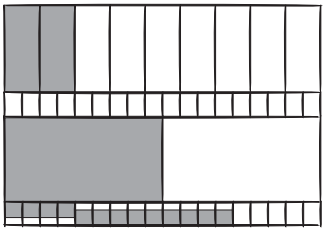
$\frac{1}{6} + \frac{5}{9} =$



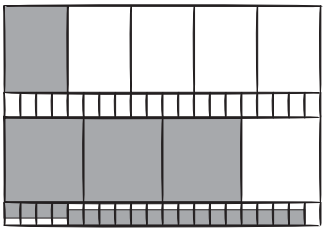
$\frac{2}{5} + \frac{1}{2} =$



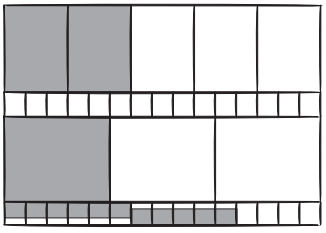
$\frac{2}{9} + \frac{1}{2} =$



$\frac{1}{5} + \frac{3}{4} =$



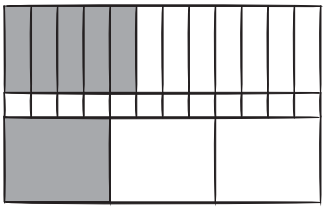
$\frac{2}{5} + \frac{1}{3} =$



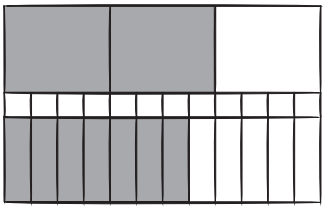
SUBTRACTING FRACTIONS

Add the fractions on this page.
Before adding make sure each fraction has the same denominator.

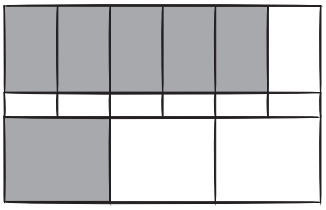
$\frac{5}{12} - \frac{1}{3} = \frac{5}{12} - \frac{4}{12}$



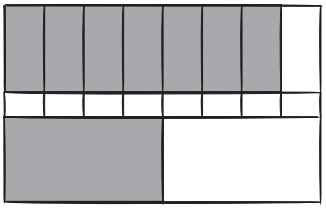
$\frac{2}{3} - \frac{7}{12} =$



$\frac{5}{6} - \frac{1}{3} =$

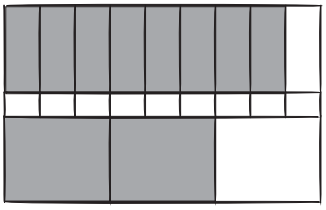


$\frac{7}{8} - \frac{1}{2} =$

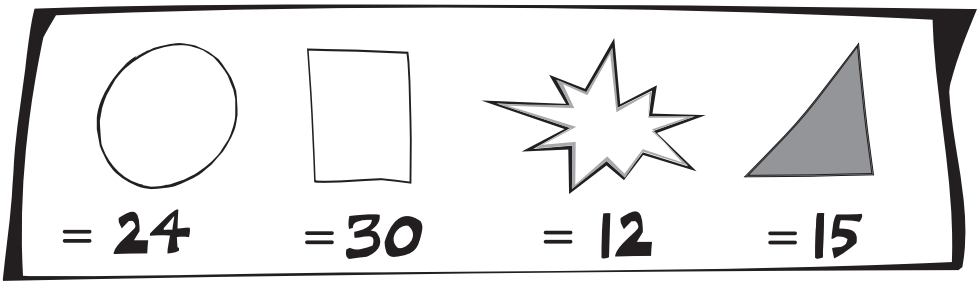


$\frac{4}{5} - \frac{3}{10} =$

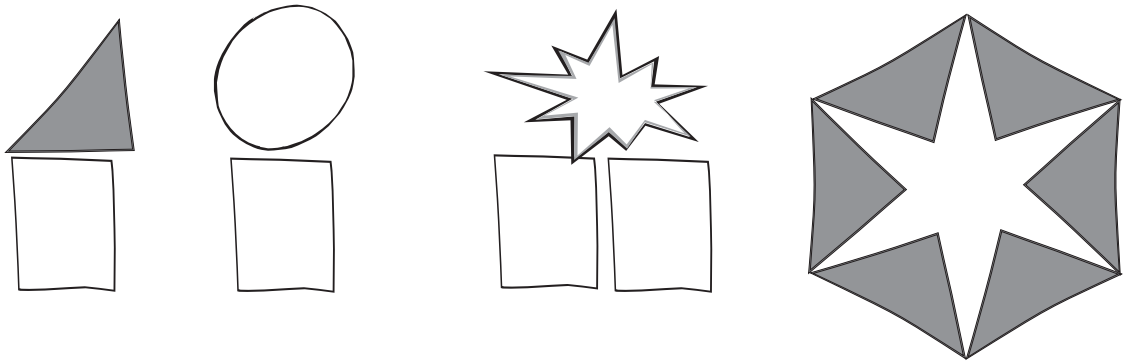
$\frac{8}{9} - \frac{2}{3} =$

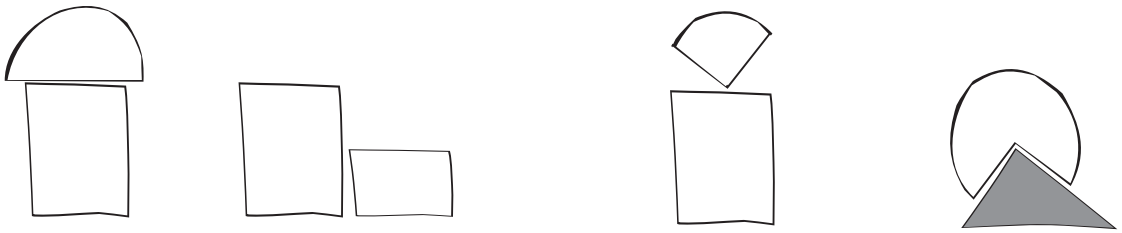


VALUE RELATIONS



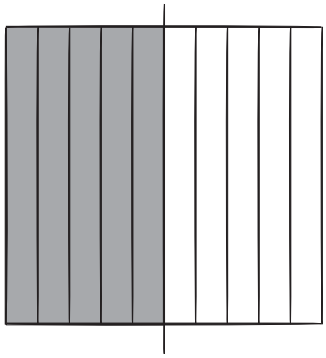
Find the value of each.



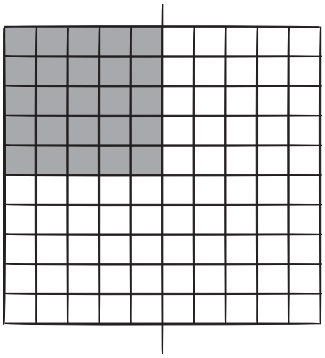


FRACTIONS AND DECIMALS

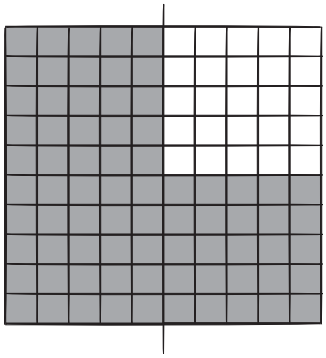
Some important fractions and decimals are below.



$\frac{5}{10} = \frac{1}{2} = 0.5$



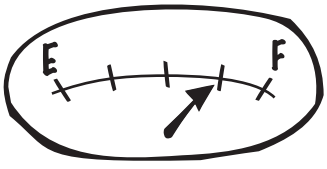
$\frac{25}{100} = \frac{1}{4} = 0.25$



$\frac{75}{100} = \frac{3}{4} = 0.75$

Rewrite these fractions and mixed numbers as decimals.

$\frac{1}{2} =$	$\frac{1}{4} =$	$\frac{3}{4} =$
$1\frac{1}{2} =$	$2\frac{1}{4} =$	$5\frac{3}{4} =$
$9\frac{1}{2} =$	$18\frac{1}{4} =$	$7\frac{3}{4} =$
$10\frac{1}{2} =$	$20\frac{1}{4} =$	$37\frac{3}{4} =$

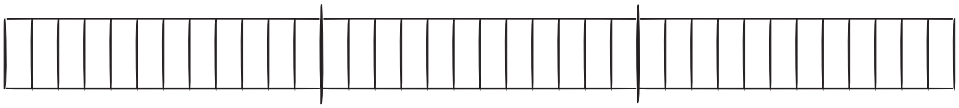


The gas tank is
..... full
0.25 0.5 0.75

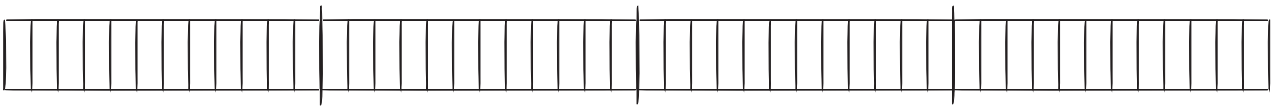
The pineapple's weight is
..... kg
2.5 2.75 2.25

FRACTIONS & DECIMALS

$\frac{1}{3}$ of 36 $\Rightarrow$ $36 \div 3 = 12$ $\therefore$ $\frac{2}{3}$ of $36 = 24$



$\frac{1}{4}$ of 48 $\Rightarrow$ $48 \div 4 =$ ..... $\therefore$ $\frac{3}{4}$ of $48 =$ .....



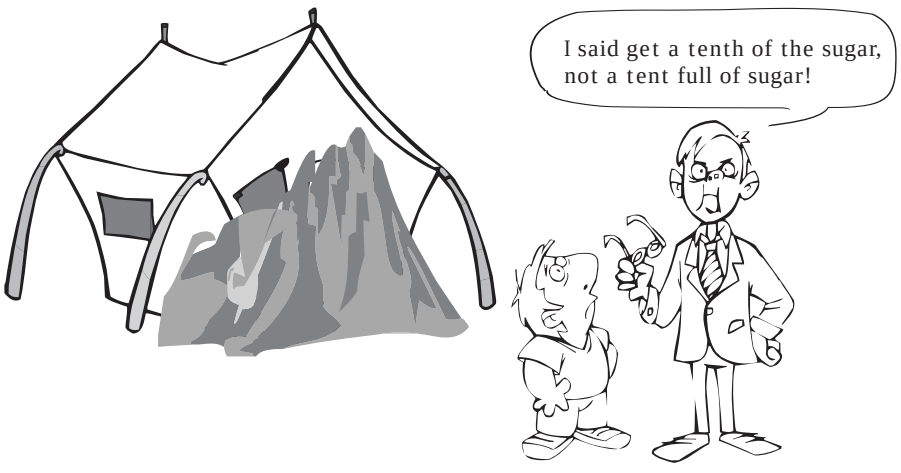
$\frac{1}{5}$ of 60 $\Rightarrow$ $60 \div 5 =$ ..... $\therefore$ $\frac{4}{5}$ of $60 =$ .....

$\frac{1}{6}$ of 24 $\Rightarrow$ $24 \div 6 =$ ..... $\therefore$ $\frac{5}{6}$ of $24 =$ .....

Write the decimal equivalents of these fractions.

$\frac{1}{2} =$ ..... $\frac{1}{4} =$ ..... $\frac{3}{4} =$ .....

$\frac{1}{5} =$ 0·2 $\frac{2}{5} =$ ..... $\frac{3}{5} =$ ..... $\frac{4}{5} =$ .....



$\frac{1}{10} =$ .....

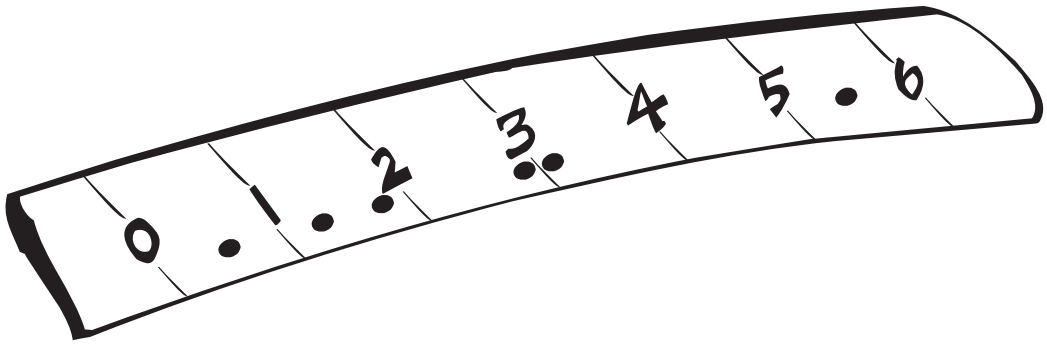
$\frac{3}{10} =$ .....

$\frac{7}{10} =$ .....

$\frac{9}{10} =$ .....

FRACTIONS & DECIMALS

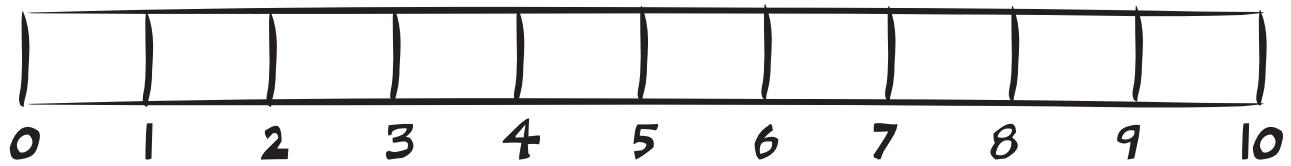
Draw a line between the decimals and the correct place on the ruler.



0·5 1·3 5·4 3·1 1·8 2·9

Show where these numbers go on the number line:

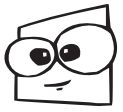
7.6, 2.5, 3.7, 4.2, 1.1, 5.4, 8.3



 $\frac{1}{2}$ of 24 = ...

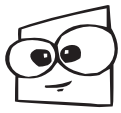
 $\frac{1}{2}$ of 240 = ...

 $\frac{3}{4}$ of 80 = ...

 $\frac{3}{4}$ of 800 = ...

 $\frac{1}{4}$ of 52 = ...

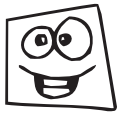
 $\frac{1}{4}$ of 520 = ...

 $\frac{1}{3}$ of 72 = ...

 $\frac{1}{3}$ of 720 = ...

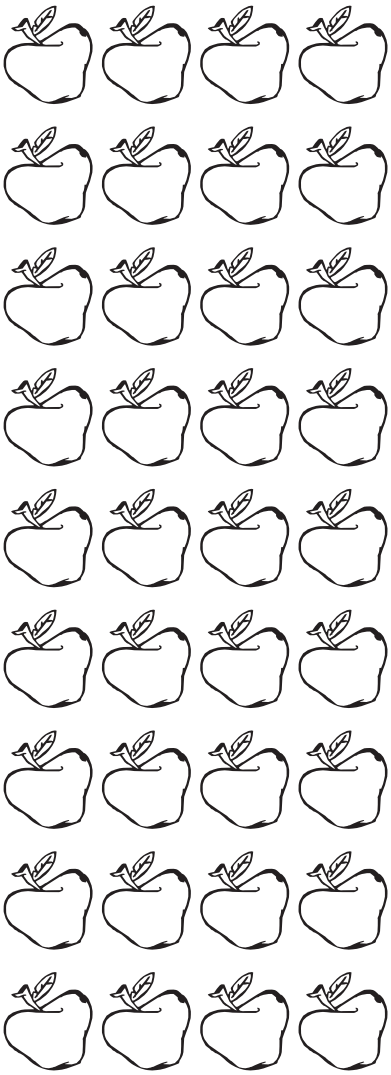
 $\frac{1}{5}$ of 65 = ...

 $\frac{1}{5}$ of 650 = ...

 $\frac{2}{3}$ of 54 = ...

 $\frac{2}{3}$ of 540 = ...

There are ..... apples altogether.



How many apples are in:

$\frac{1}{2}$ = ☐

$\frac{1}{3}$ = ☐

$\frac{1}{4}$ = ☐

$\frac{1}{6}$ = ☐

$\frac{1}{9}$ = ☐

$\frac{1}{12}$ = ☐

$\frac{2}{3}$ = ☐

$\frac{3}{4}$ = ☐

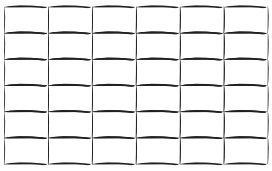
$\frac{5}{6}$ = ☐

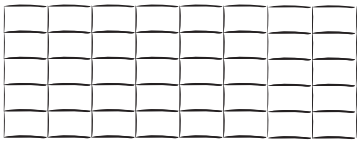
$\frac{5}{9}$ = ☐

$\frac{7}{12}$ = ☐

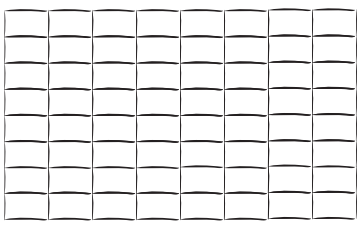
Which is bigger?

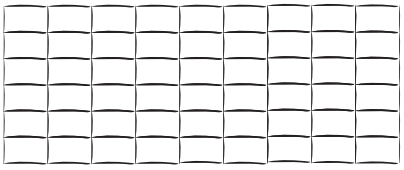
$\frac{5}{6}$ of 36 or $\frac{4}{5}$ of 40





$\frac{3}{8}$ of 64 or $\frac{3}{6}$ of 54





Brad has an orchard which has 80 fruit trees.
Two eighths of the trees are apple trees, one quarter of them are nectarine trees, four sixteenths of them are pear trees and the rest are plum trees.

How many of each tree does Brad have?

Apple: ..... Nectarine: ..... Pear Trees: ..... Plum Trees: .....

Tom and Kate collect apples from Brad's orchard. On the way home Tom eats one third of the apples. If Tom ate 4 apples, how many were picked?

Tom and Kate picked ..... apples

David and Victoria purchase an aquarium for their new home. One sixth of the fish in the aquarium are Black Tails. Two sixths of the fish in the aquarium are Blue Fins. The rest of the fish are Goldfish. David counts 3 black tails. Therefore there are:

..... Blue Fins

..... Goldfish

Maddox took 5 oranges and cut them into quarters.
How many quarters are there?

..... quarters

Suri's fruit punch contains one and three quarter litres of apple juice, two eights of a litre of lime juice and four and a quarter litres of orange juice. In one particularly hot day, Suri drinks 3 litres of the fruit punch. She then adds four and a quarter litres of mango juice. How many litres of fruit punch does she now have?

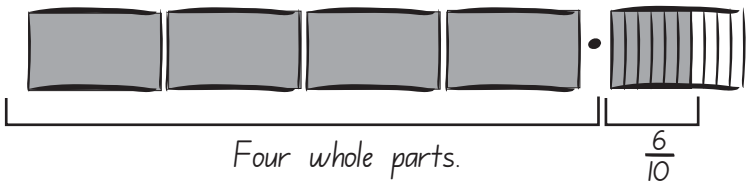
Total = ... Litres

DECIMALS

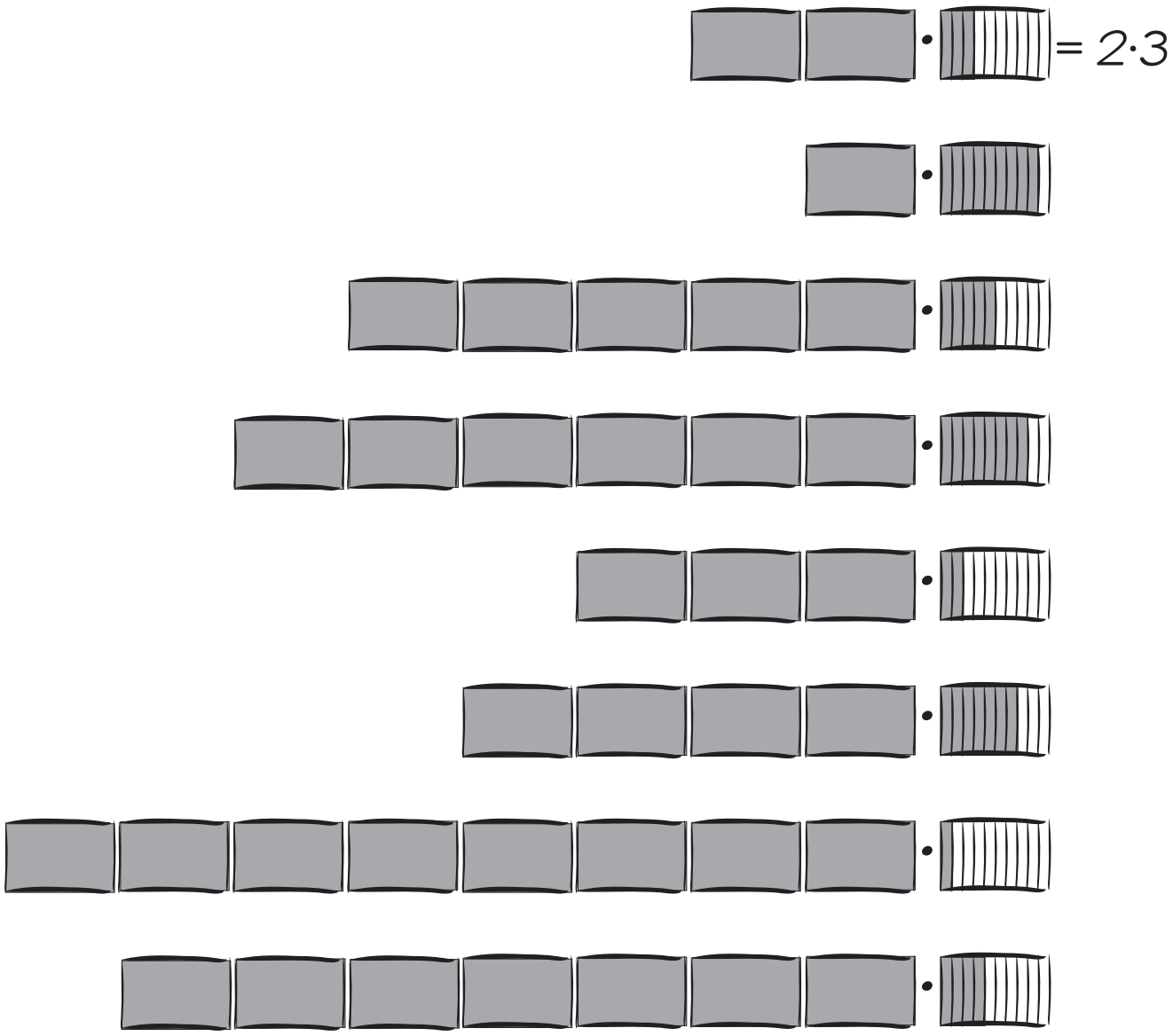
A decimal number contains a decimal point.

4·6 This is read as four point six.

The whole part, four. The fractional part, six tenths.



Write the numbers that each diagram represents.



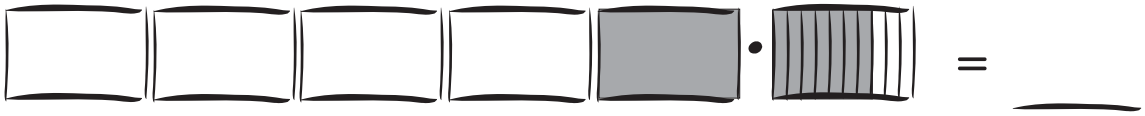
DECIMALS & MIXED NUMBERS

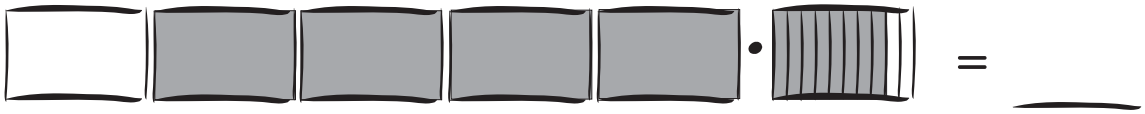
A decimal number can also be written as a mixed number (a number with a fraction) or expressed in words.

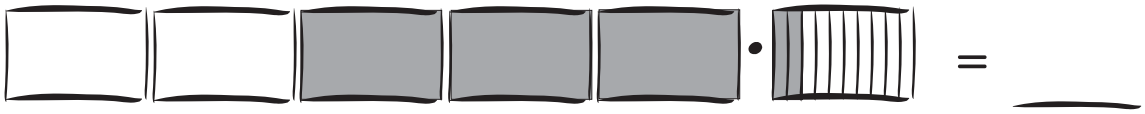
Decimal Number	Mixed Number	Description
3·2	$3\frac{2}{10}$	Three and two tenths
	$4\frac{6}{10}$	
5·1		
		Seven and five tenths
	9	
		Six and eight tenths
2·4		
		Eight and nine tenths
	$1\frac{3}{10}$	
10·7		

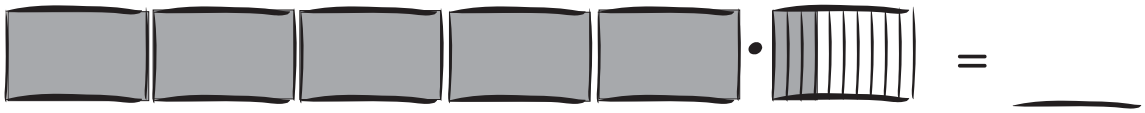
DECIMALS

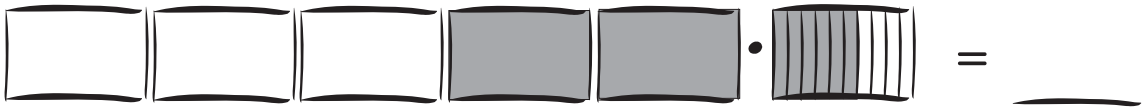
Give the number that is represented by each of the diagrams.

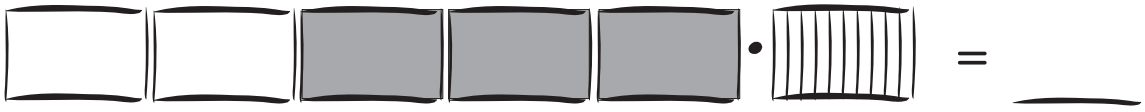


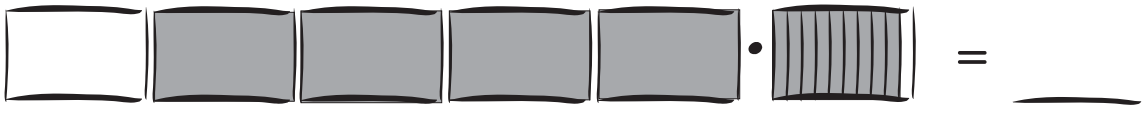












DECIMALS

Write the numbers into the place value chart.

	Hundreds	Tens	Ones	Tenths
three and seven tenths			•	
eighteen and two tenths			•	
twenty four and one tenths			•	
fifty six and three tenths			•	
forty seven and nine tenths			•	
one hundred and twelve and four tenths			•	
eight hundred and sixty five and eight tenths			•	
three hundred and six tenths			•	
seven hundred and ninety and seven tenths			•	

Write these numbers in decimal form.

$8 + \frac{2}{10} =$ ____

$5 + \frac{1}{10} =$ ____

$10 + 6 + \frac{8}{10} =$ ____

$30 + 7 + \frac{1}{10} =$ ____

$4 + \frac{7}{10} = 4.7$

$50 + 9 + \frac{6}{10} =$ ____

$20 + \frac{3}{10} =$ ____

$46 + \frac{7}{10} =$ ____

DECIMAL & EXPANDED FORM

Write each number in expanded form.

$436{\cdot}2 = 400 + 30 + 2 + \frac{2}{10}$

$52{\cdot}8 =$

$64{\cdot}5 =$

$71{\cdot}9 =$

$85{\cdot}2 =$

$313{\cdot}6 =$

$920{\cdot}3 =$

$207{\cdot}4 =$

$536{\cdot}7 =$

Rewrite these into decimal form.

$80 + 5 + \frac{1}{10} =$

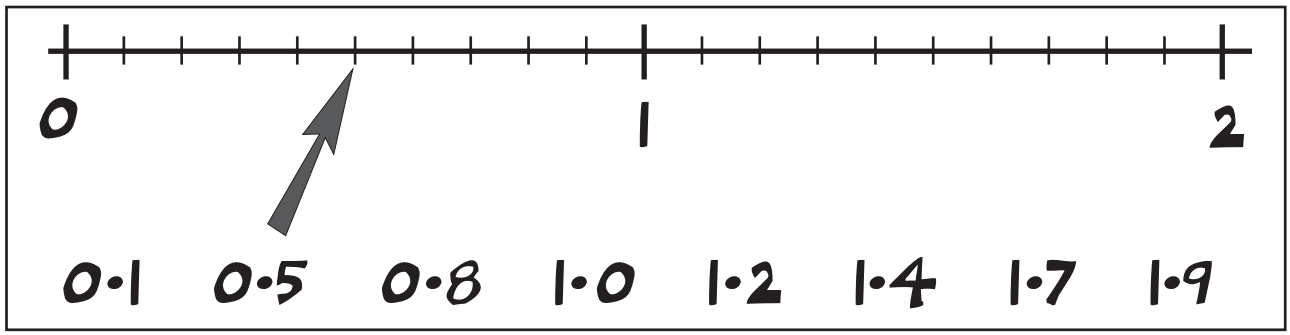
$500 + 90 + 7 + \frac{2}{10} =$

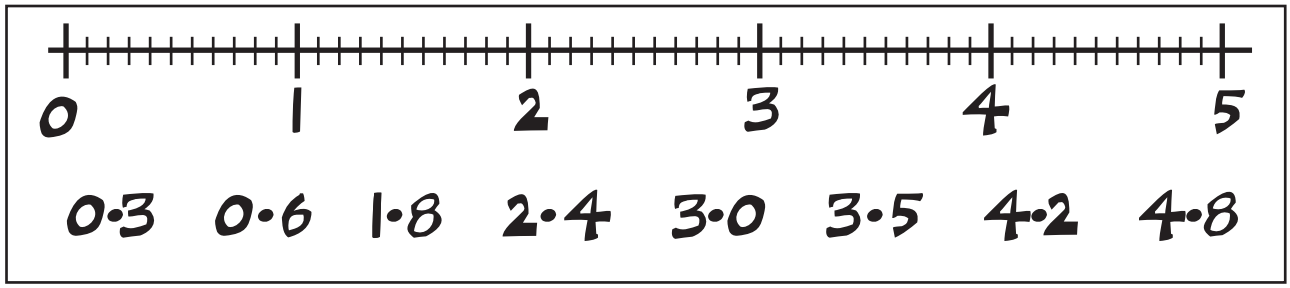
$600 + 40 + \frac{7}{10} =$

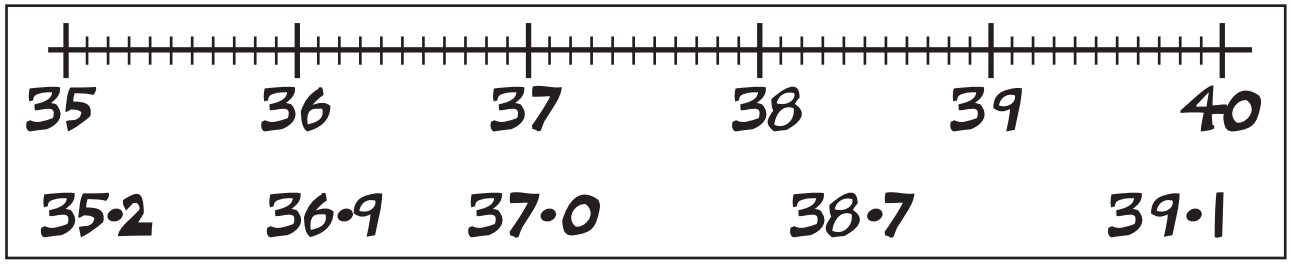
$100 + 8 + \frac{5}{10} =$

DECIMALS

Draw a line to show where each number is on the number line.



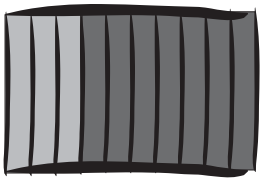




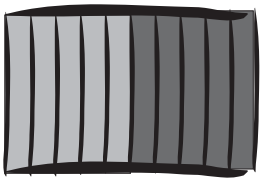
Below are some pairs of numbers.
Circle the larger number in each pair.

1·1	0·8	3·0	3·5	37·0	36·9
1·2	1·7	4·8	2·4	38·4	35·1
1·4	1·0	0·5	5·0	37·6	37·7

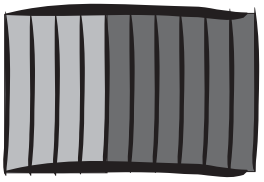
ADDING TENTHS



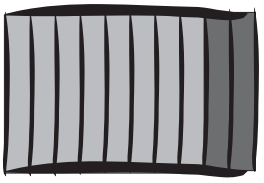
$$0.3 + 0.7 =$$



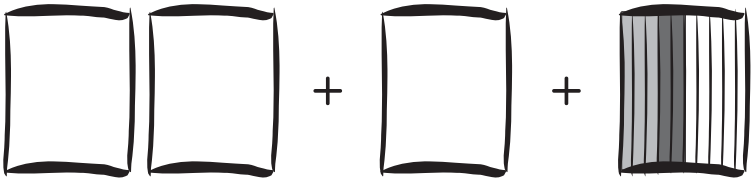
$$0.5 + 0.5 =$$



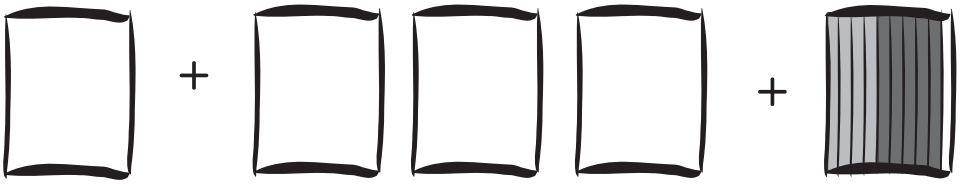
$$0.4 + 0.6 =$$



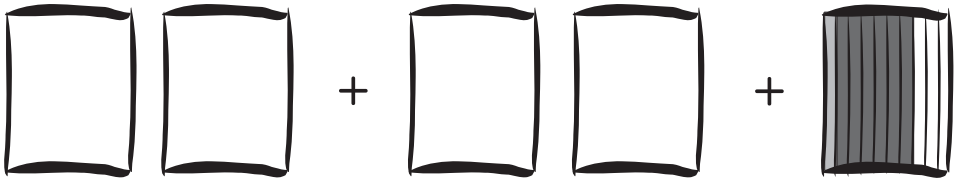
$$0.8 + 0.2 =$$



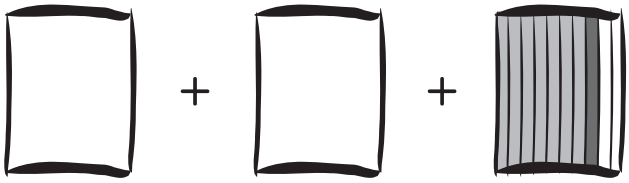
$$2.3 + 1.2 =$$



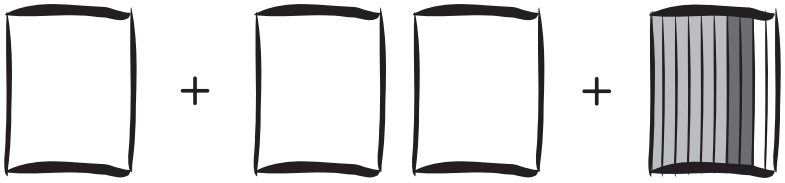
$$1.4 + 3.5 =$$



$$2.1 + 2.6 =$$



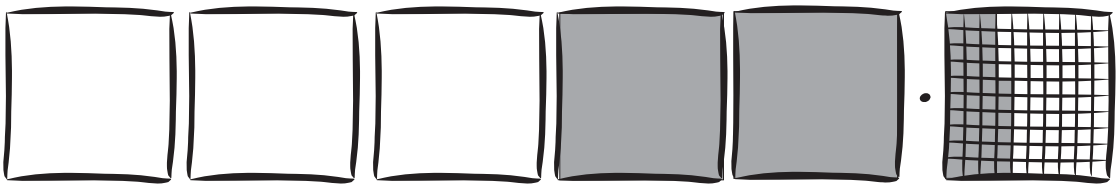
$$1.7 + 1.1 =$$

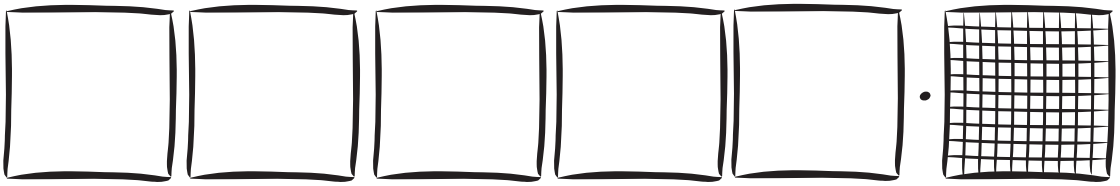


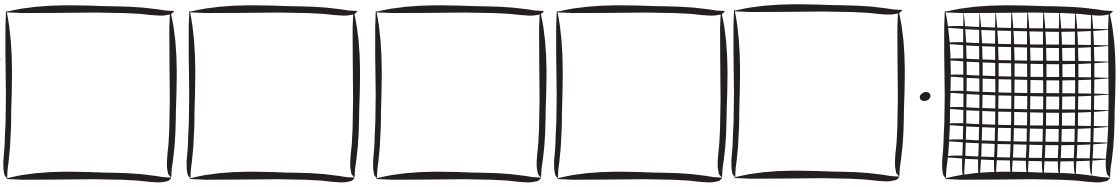
$$1.6 + 2.2 =$$

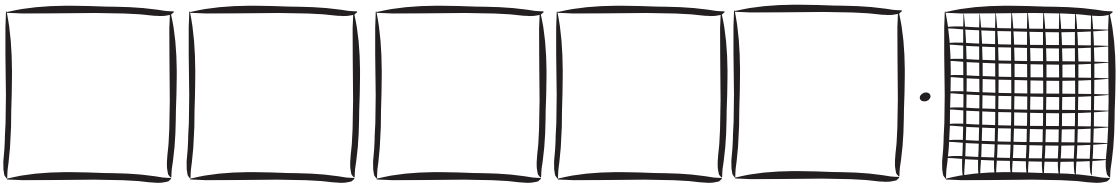
HUNDRETHS

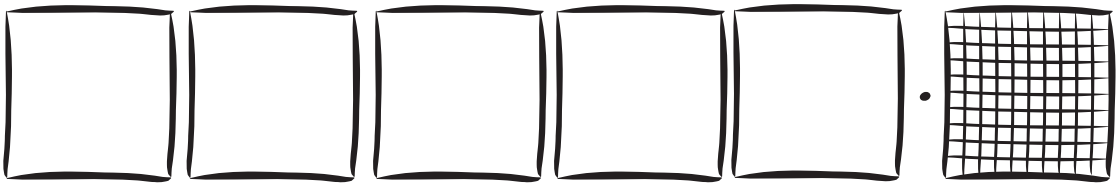
When a tenth is divided 10 times each block represents a hundreth. Shade the diagrams to represent the given number.

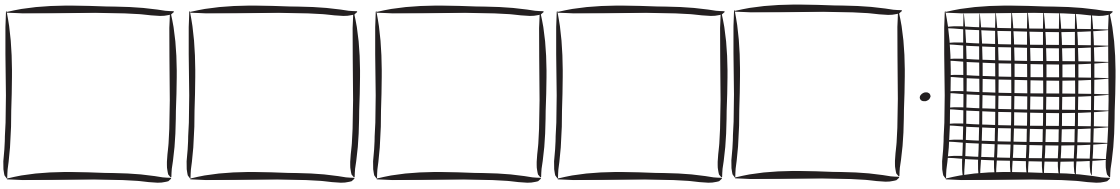
2·36 

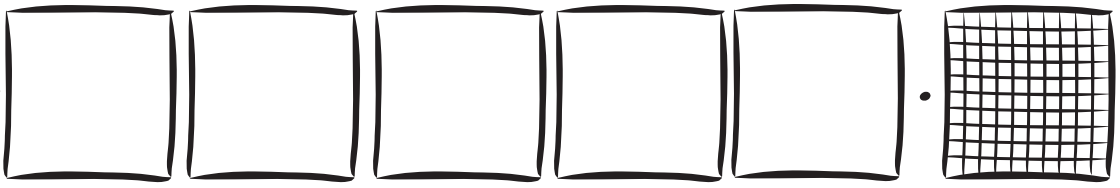
4·81 

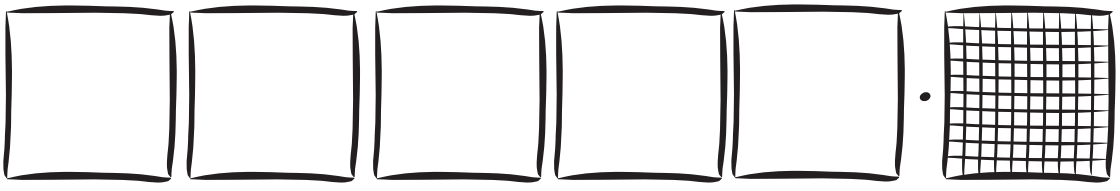
3·45 

1·27 

2·9 

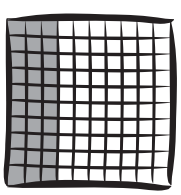
5·07 

0·03 

1·10 

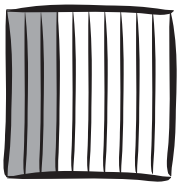
HUNDREDTHS

The first two fractions (below) are equal. They do not equal the last.



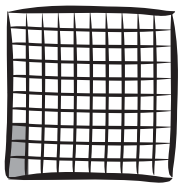
$\frac{30}{100} = 0.3$

$=$



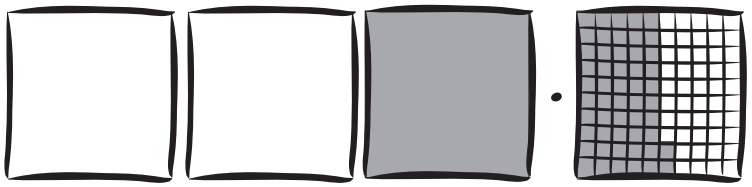
$\frac{3}{10} = 0.3$

$\neq$



$\frac{3}{100} = 0.03$

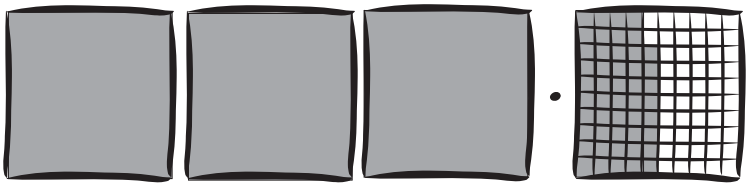
Write each of these as: 1. Decimal numbers.
2. Expanded form.
3. Mixed numbers.



Decimal = 1.52

Expanded form = $1 + \frac{5}{10} + \frac{2}{100}$

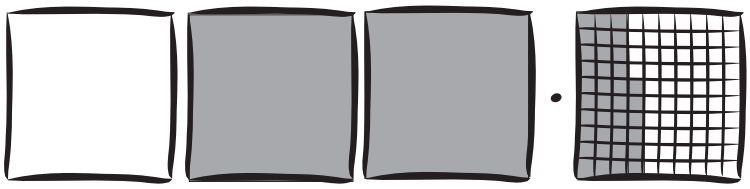
Mixed number = $1\frac{52}{100}$



Decimal:

Expanded form:

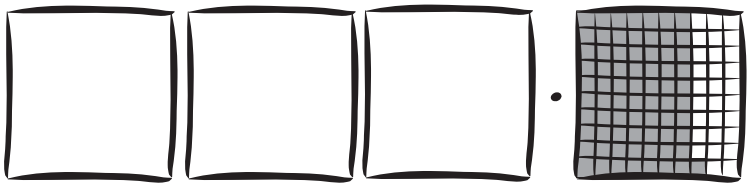
Mixed number:



Decimal:

Expanded form:

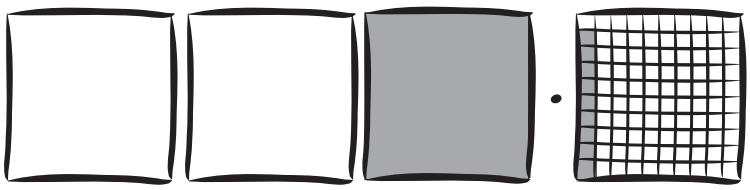
Mixed number:



Decimal:

Expanded form:

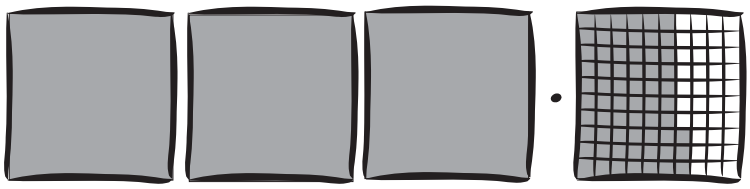
Mixed number:



Decimal:

Expanded form:

Mixed number:



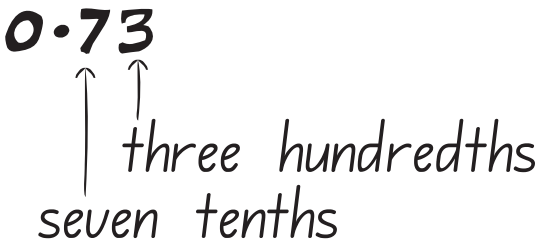
Decimal:

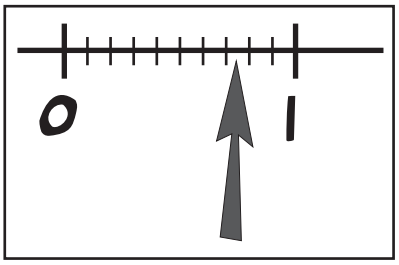
Expanded form:

Mixed number:

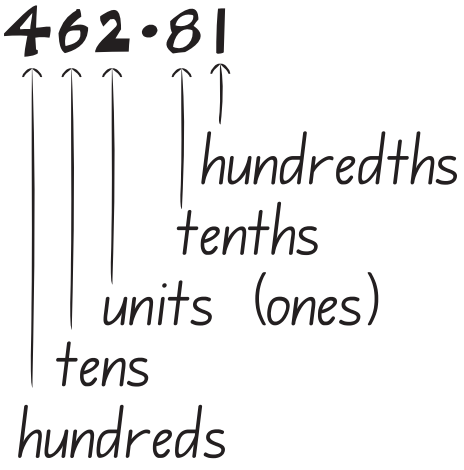
DECIMALS

Decimals come between whole numbers.





Each digit to the right becomes ten times smaller. This also means that each digit to the left becomes ten times bigger.



The **6** in **14·67** is: six tenths

The **8** in **8·32** is: _____

The **5** in **29·45** is: _____

The **1** in **156·28** is: _____

The **9** in **30·89** is: _____

The **0** in **5·06** is: _____

The **2** in **72·90** is: _____

Complete these sums.

$6.2 \times 10 = 62$

$12.3 \_\_\_\_ = 1.23$

$5.1 \_\_\_\_ = 510.0$

$0.48 \_\_\_\_ = 48.0$

$101.0 \_\_\_\_ = 1.01$

$91.2 \_\_\_\_ = 9.12$

$215.0 \_\_\_\_ = 2.15$

Complete the sums.

$\frac{1}{2} + \square = 1$

$\frac{1}{3} + \square = 1$

$\frac{3}{4} + \square = 2$

$\frac{4}{5} + \square = 2$

$1 - \frac{2}{2} = \square$

$1 - \frac{2}{3} = \square$

Complete the table.

Fraction	Decimal
$\frac{23}{100}$	
	0.19
	0.8
$\frac{7}{100}$	
$3\frac{1}{10}$	
	2.3

$2 - \frac{1}{4} = \square$

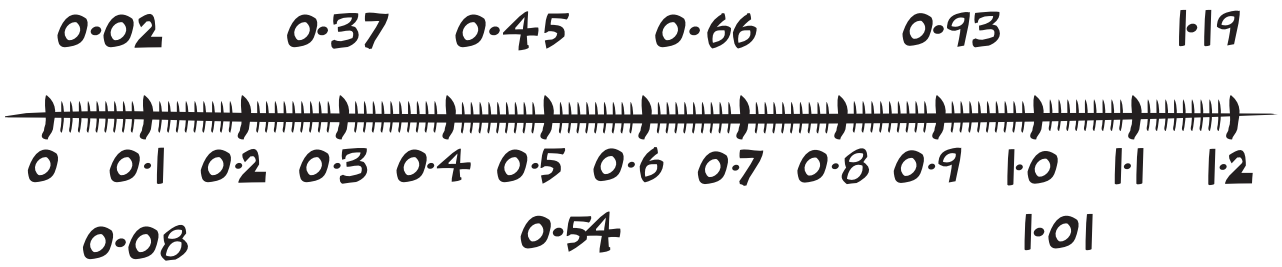
$3 - \frac{3}{5} = \square$

DECIMALS

Write these numbers onto the place value chart.

	Tens	Units	•	Tenths	Hundredths
Five and twenty three hundredths		5	·	2	3
Twenty four and sixteen hundredths					
Thirty six and twelve hundredths					
Eighteen and fifty one hundredths					
Ninety nine and ten hundredths					
Eighty two and four hundredths					

Locate each of the numbers on the number line.

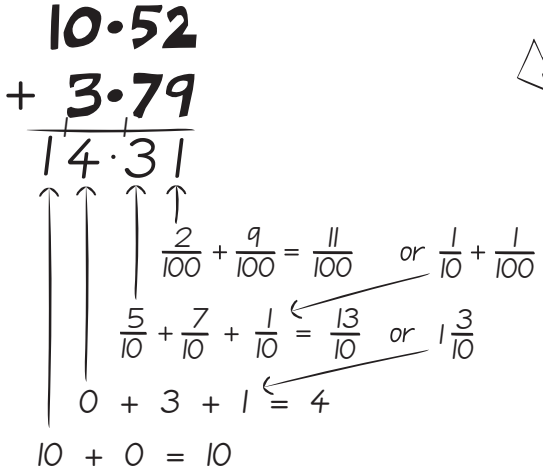


All the numbers above should be located on the number line.
Use less than (<) or greater then (>) to make these statements true.

0·08 ◯ 0·14	1·01 ◯ 0·02
0·37 ◯ 0·45	0·14 ◯ 0·66
1·19 ◯ 0·93	0·02 ◯ 1·19
0·66 ◯ 0·37	0·93 ◯ 0·08

ADDING DECIMALS

10·52 + 3·79 → Write the numbers underneath each other so that the decimal points line up.



Now add these.

22·07 15·38	9·45 42·32	21·68 12·15
33·56 21·59	17·44 19·83	25·77 32·47
86·48 17·75	72·39 36·83	57·65 15·88

DECIMAL ADDITION

Rewrite these numbers in columns with the decimal points in line. Then complete the additions.

0·05 + 0·09

0·27 + 4·0

1·8 + 3·46

7·25 + 1·85

0·54 + 2·53

1·65 + 0·08

0·68 + 0·9

11·63 + 9·82

2·76 + 1·37

5·99 + 1·09

DECIMAL SUBTRACTION

Rewrite these numbers in columns with the decimal points in line. Then complete the subtraction.

0·05 – 0·02

0·43 – 0·20

1·2 – 0·8

1·35 – 0·65

0·7 – 0·45

1·7 – 0·95

10·0 – 0·14

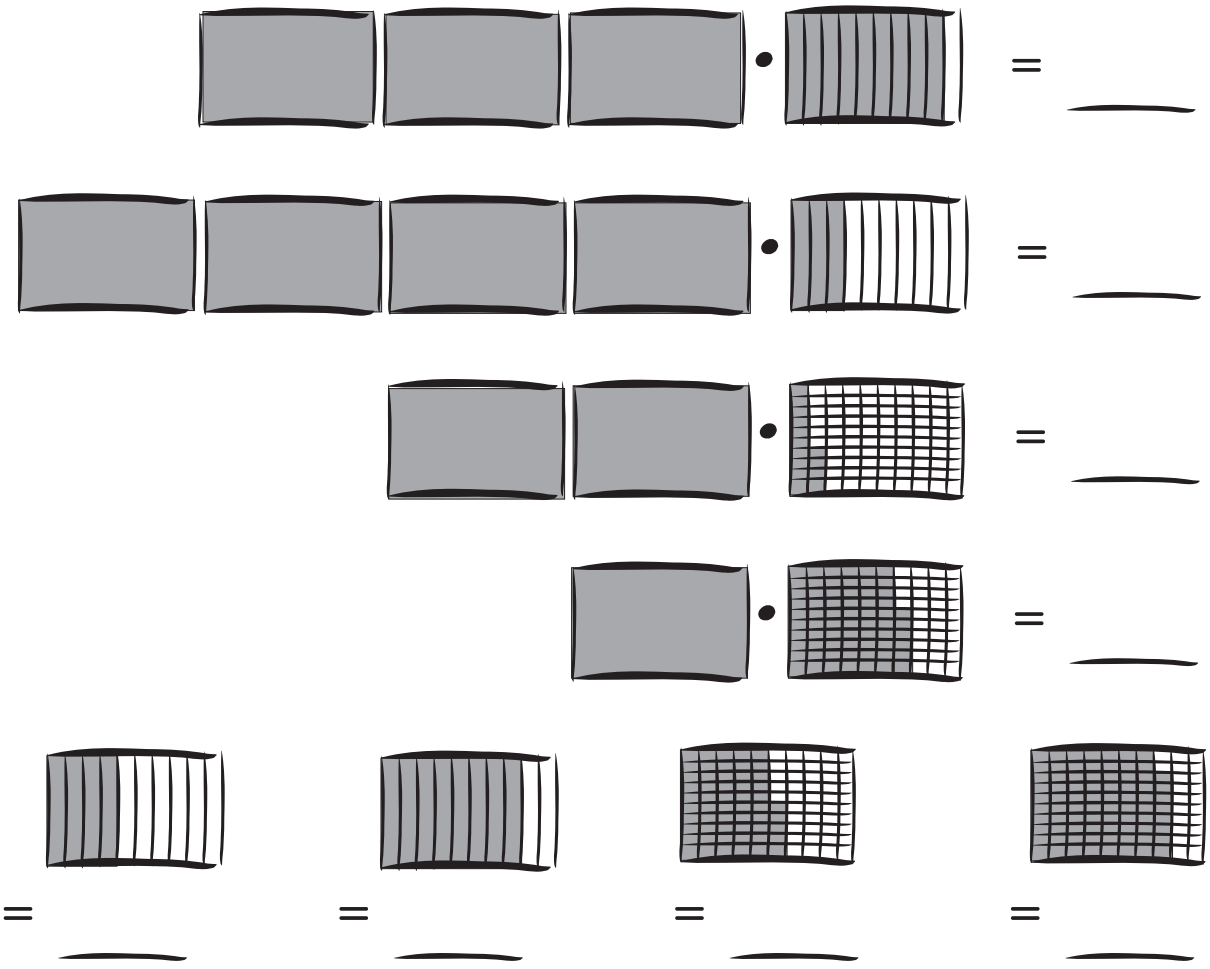
6·42 – 5·01

10·68 – 8·89

8·0 – 5·13

DECIMAL TEST

Write the number that is represented by the shading.



Complete the table.

Decimal Number	Mixed Number	Description
5·4		
		Three and six tenths
		One hundred and twenty eight hundreths
	$35\frac{16}{100}$	

Write the value of the 5 in each of these numbers.

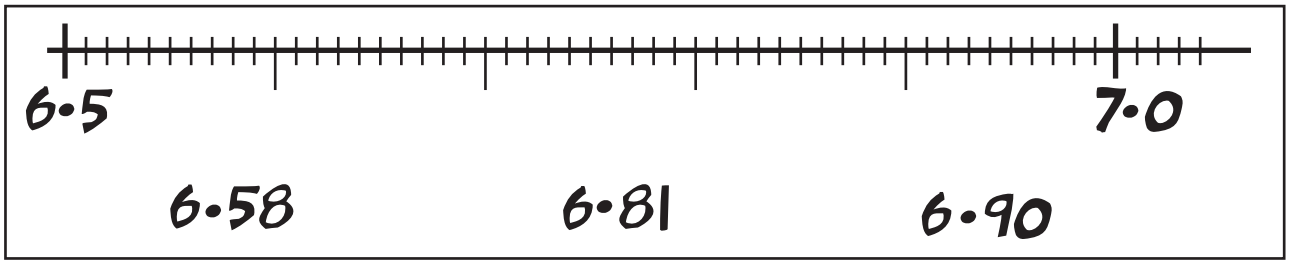
16·51 → ☐

50·62 → ☐

0·35 → ☐

25·48 → ☐

Locate each number on the number line.



Use a greater than (>), equals (=), or less than (<), to make each a true statement.

0·9 ___ 1·0 0·36 ___ 0·52 1·27 ___ 0·95

4·2 ___ 3·8 6 ___ 6·0 10 ___ 0·30

Add

6·2 + 3·6 = ___ 15·1 + 3·5 = ___

8·3 + 5·4 = ___ 1·3 + 9·7 = ___

9·1 + 3·4 = ___ 11·1 + 0·9 = ___

Add

$$\begin{array}{r} 5{\cdot}41 \\ +\ 3{\cdot}99 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} 6{\cdot}85 \\ +\ 17{\cdot}78 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} 8{\cdot}37 \\ +\ 16{\cdot}85 \\ \hline \\ \hline \end{array}$$

Rewrite these mixed numbers as decimal numbers.

$3\frac{1}{4} =$ _____ $\qquad 18\frac{1}{2} =$ _____ $\qquad 35\frac{3}{4} =$ _____

Rewrite these decimal numbers as mixed numbers.

20·8	36·24	10·03	15·25
_____	_____	_____	_____

Subtract

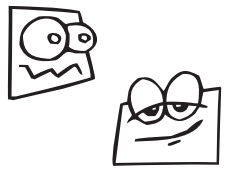
$$\begin{array}{r} 5{\cdot}7 \\ -\ 3{\cdot}2 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} 27{\cdot}5 \\ -\ 6{\cdot}75 \\ \hline \\ \hline \end{array}$$

$15{\cdot}54 - 7 =$ _____

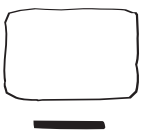
$9 - 3{\cdot}45 =$ _____

Hair stylist Terrence charges $154.95 for a style, colour and haircut. Josette pays with two $100 notes. How much change should she get?

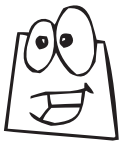
Add up all the correct answers from the last 3 pages.
Put your score in the box.



45 and above: A+ student
40 and above: A student



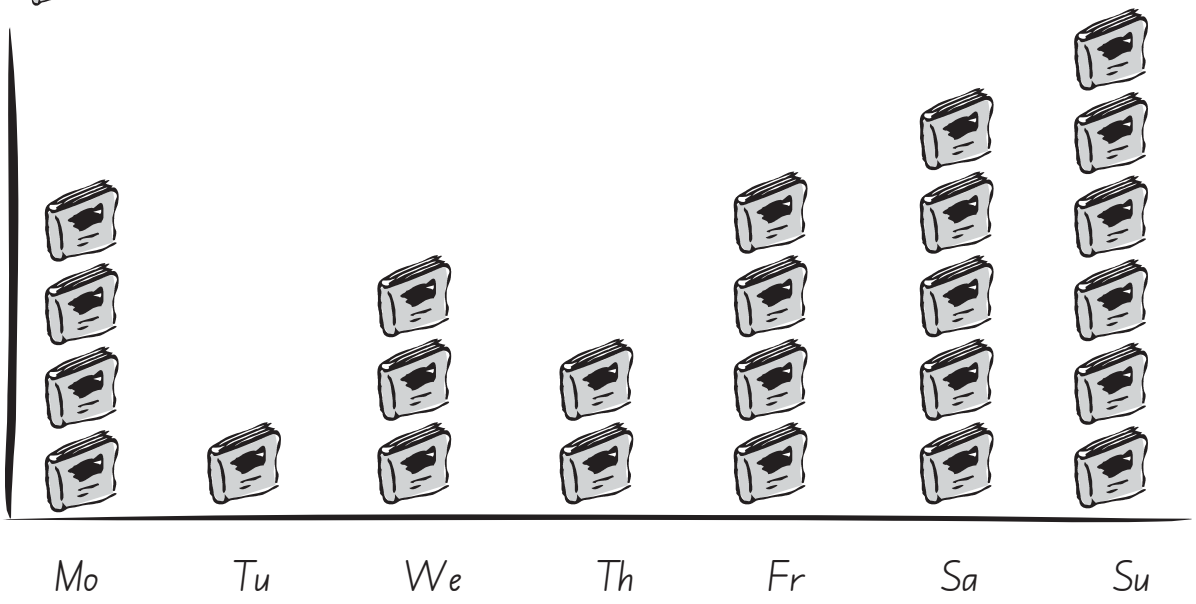
/50



Always strive to be an A+ student.
Find out where you went wrong. If needed rub out your answers and try the test again another day.

GRAPHS

The graph shows the number of books that Katie read last week.
The  symbol represents 1 book.



Altogether Katie read ..... books.

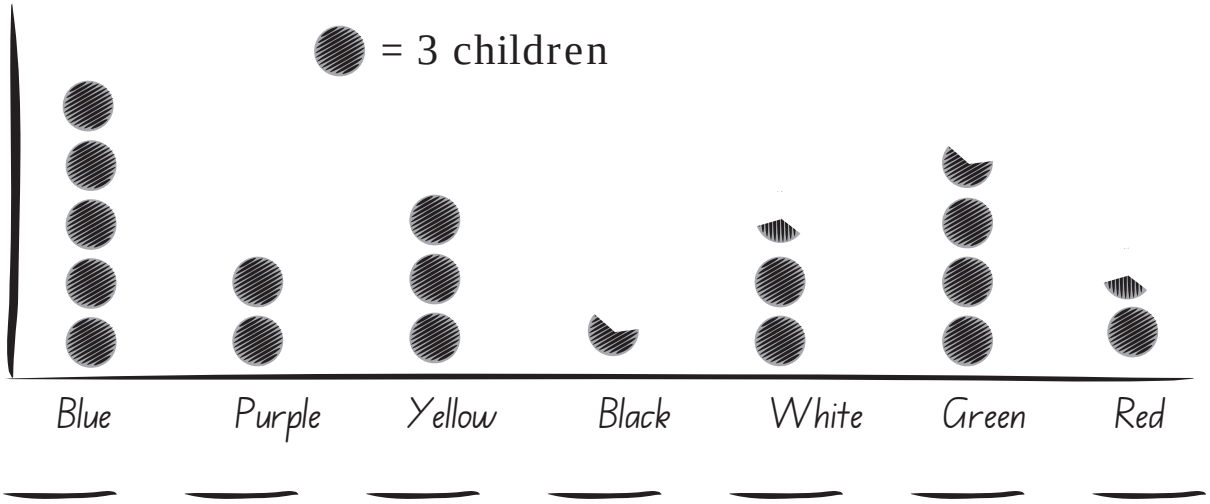
Katie read the least number of books on .....

Katie read the most books on .....

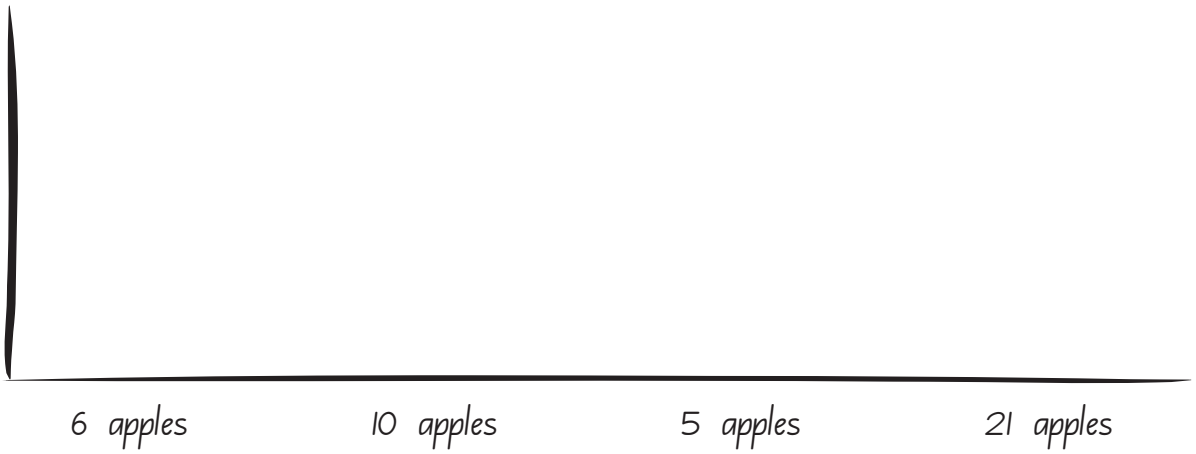
Katie read a total of 11 books on ..... & .....

Katie read ..... more book on Saturday than on Friday.

Katie did a survey on children's favourite colours. Below are her survey results. Write underneath how many chose each colour.



Complete the graph by drawing a  to represent 2 apples.

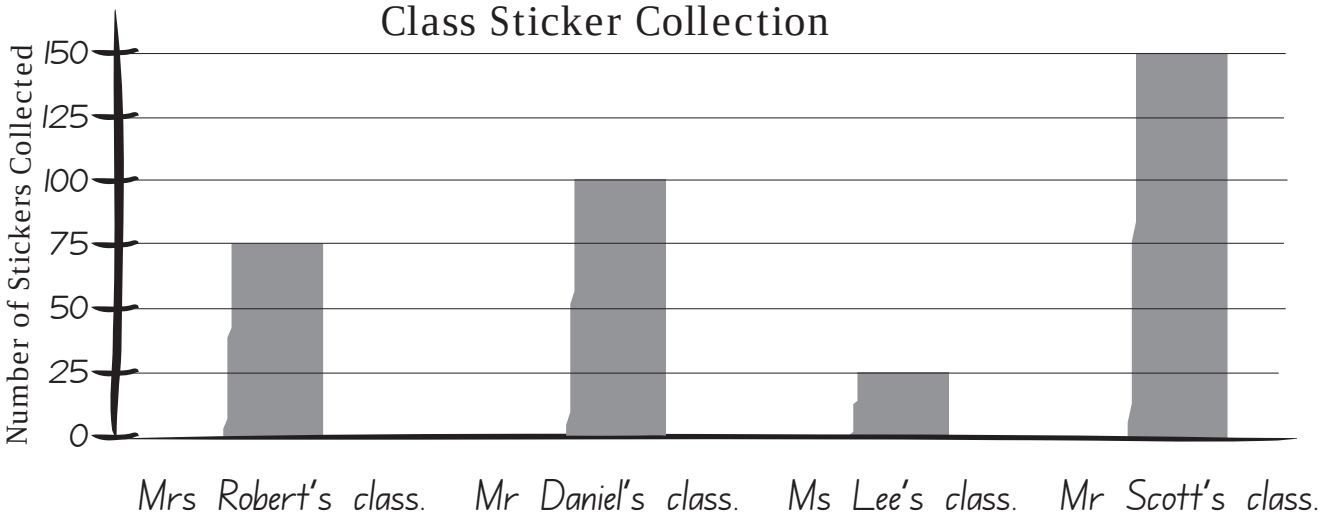


If an apple costs $0.50 then six apples cost $ ____

If an apple costs $0.50 then 21 apples cost $ ____

Give the total cost of apples in the graph.

$ ____ + $ ____ + $ ____ + $ ____ = $ ____
6 apples 10 apples 5 apples 21 apples



Which class has collected the most stickers? _____

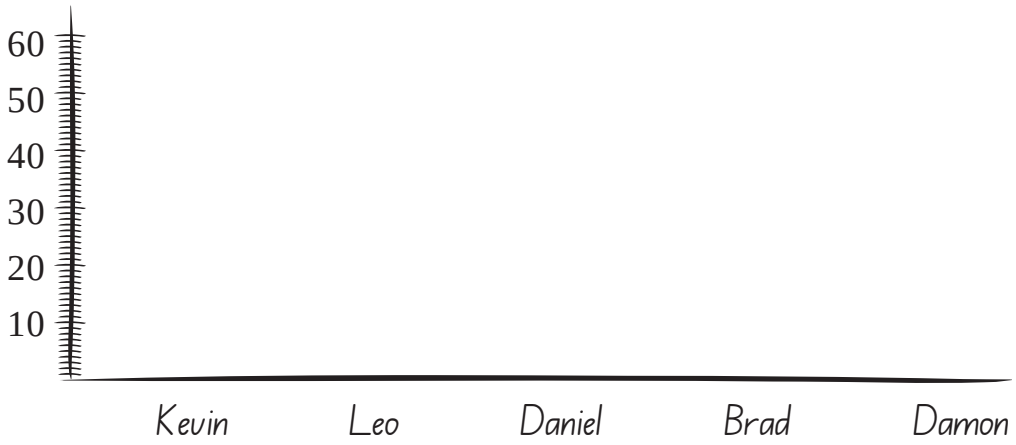
Which teacher does not give out many stickers? _____

Mr Daniel's class has ____ more stickers than Mrs Roberts class.

Altogether there were ____ stickers collected.

On the graph below draw columns to represent the mass of each student.

Kevin 42kg
Leo 46kg
Daniel 55kg
Brad 48kg
Damon 35kg



The heaviest student is: _____

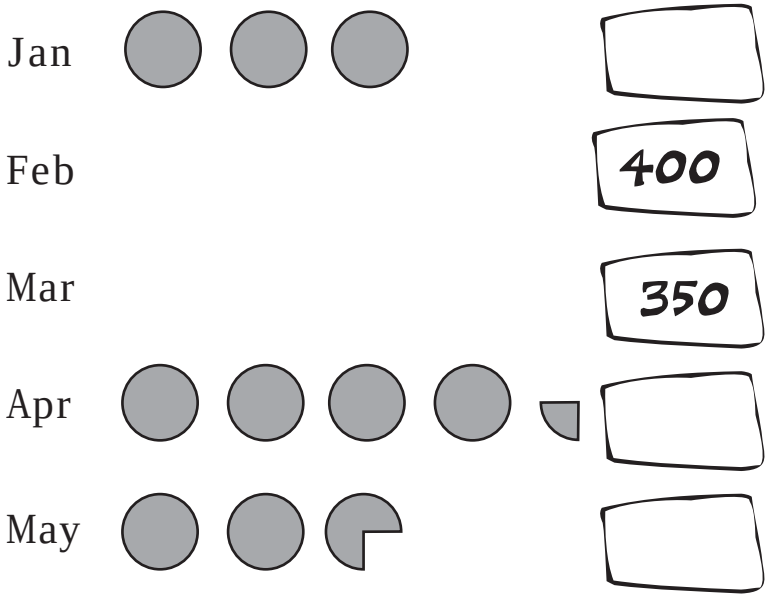
The lightest student is: _____

Brad is ____ kg heaver than Leo.

If all 5 boys were put on the scales then their total mass would be:

_____

A supermarket has made a pictogram of how many pies they sell in the first five months of the year. Each picture pie means 100 real pies. Fill in the missing numbers and pies.

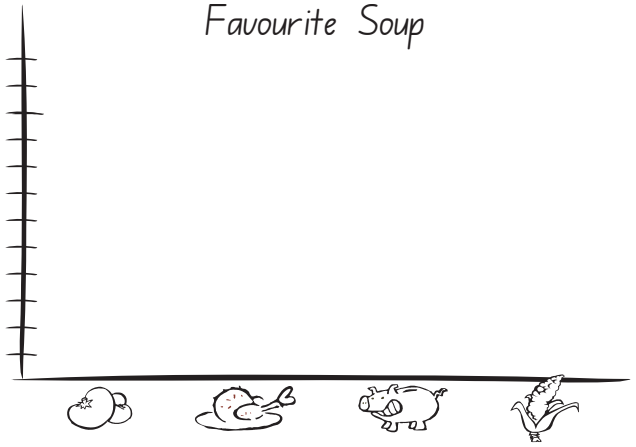


HANDLING DATA

When counting items use a tally chart with 1 dash recording each item. The frequency column adds up all the tally marks.

Complete the frequency column then complete the graph.

Favourite Soup	Tally	Frequency
Tomato	𝍸	
Chicken	𝍸 𝍸	
Ham and Bacon	𝍸 𝍸 𝍸	
Creamed Corn	𝍸	



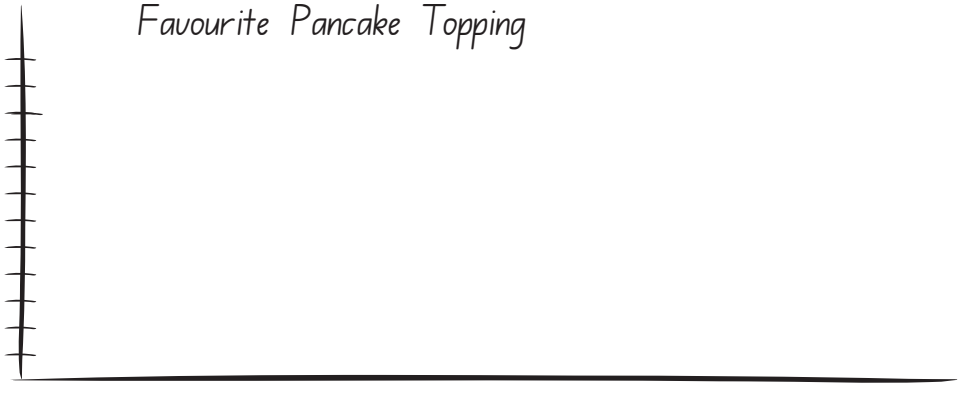
What was the most favoured soup? _____

How many of the people surveyed chose Ham and Bacon? ____

How many were surveyed? ____

Complete the frequency column then complete the graph below.

Favourite Pancake Toppings	Tally	Frequency
Maple Syrup	𝍸 𝍸	
Honey	𝍸	
Jelly and Whipped Cream	𝍸 𝍸 𝍸	
Lemon and Sugar	𝍸 𝍸	



We asked some students their favourite sport. The results are below.

Complete the frequency column then complete the graph.

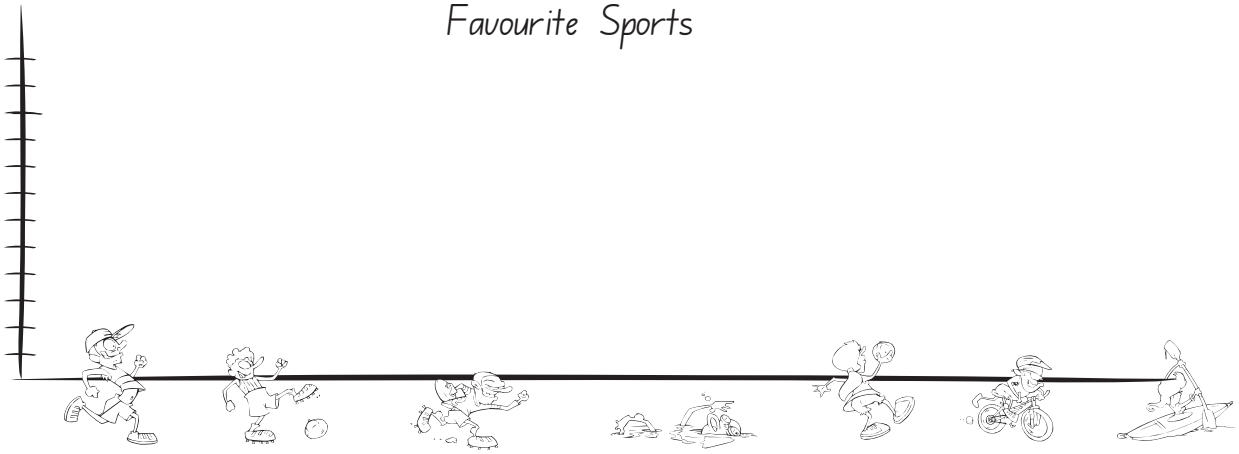
Sport	Tally	Frequency
Athletics	𝍸	
Football	𝍸 𝍸 ||	
Rugby	𝍸 |	
Swimming	|||	
Netball	𝍸 |||	
Cycling	||||	
Kayaking	||	

How many students were surveyed? _____

The most popular sport was _____

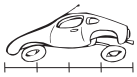
How many students said netball as their favourite? _____

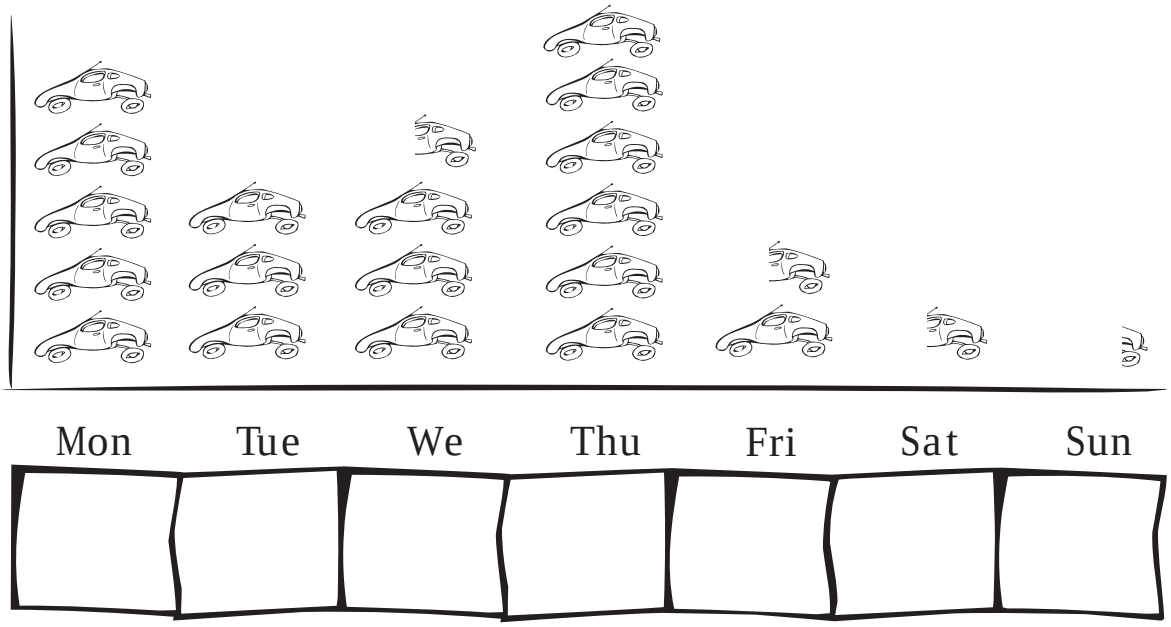
Favourite Sports



REPRESENTING DATA

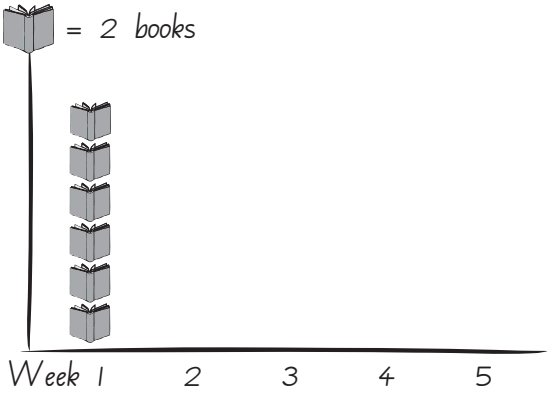
Each morning Amanda and Wayne take a note of the number of cars parked in a public car park. Write the number of cars parked each day.

 = 20 cars



Here are the number of books taken out of the library by Brad. Complete all the charts.

	Tally	Frequency
Week 1	𝍸 𝍸 ||	
Week 2	𝍸 𝍸 ||||	
Week 3	𝍸 𝍸	
Week 4	𝍸 𝍸 |	
Week 5	𝍸 𝍸 |||	

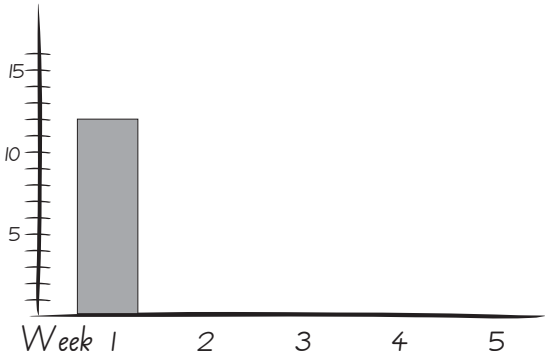


Which chart do you prefer?

.....

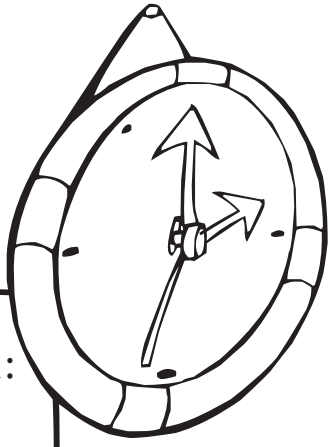
Why? .....

.....



TIME

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours



How many seconds in:

1 minute _____

15 minutes _____

20 minutes _____

How many minutes in:

1 hour _____

1.5 hours _____

8 hours _____

How many hours in:

1 day _____

3 days _____

7 days _____

How many years in 36 months?

_____

How many months in 5 years?

_____

How many months in 52 weeks?

_____

1 year = _____ days or 366 days in a _____ year.

1 year = _____ weeks.

1 year = _____ months.

1 month = (approximately) _____ weeks.

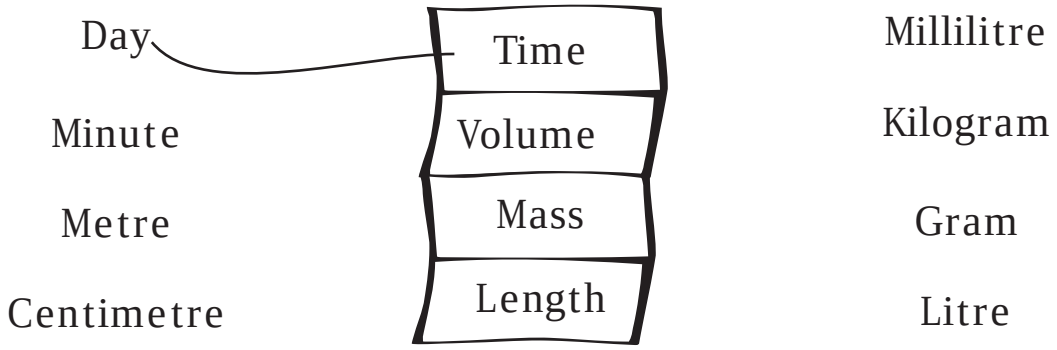
1 week = _____ days.

1 century = _____ years.

1 millennium = _____ years.

UNITS OF MEASURE

Join up the measures to the matching units.



Complete the missing numbers and units.

532 cm = ☐ m ☐ cm

2168 mm = ☐ m ☐ cm ☐ mm

1319g ☐ kg ☐ g

2134 ml = ☐ litres ☐ ml

3 hours 45 minutes = ☐ minutes

12 minutes = ☐ seconds

December = ☐ weeks ☐ days

Write in all the details.

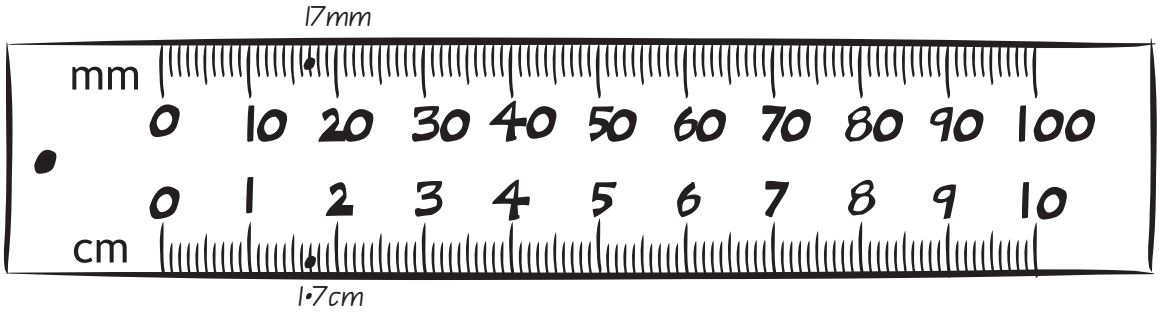
Today's date ....(day)/ ....(month)/ ....(year)

My height .....(cm) = ... (m) .....(cm)

My weight ..... My age ..... (years) ..... (months)

I go to bed at ..... I get up at .....

I sleep for ..... hours ..... minutes



Mark on the ruler the following measurements.

3·2 cm **46** mm **0·7** cm **29** mm **7·1** cm **85** mm

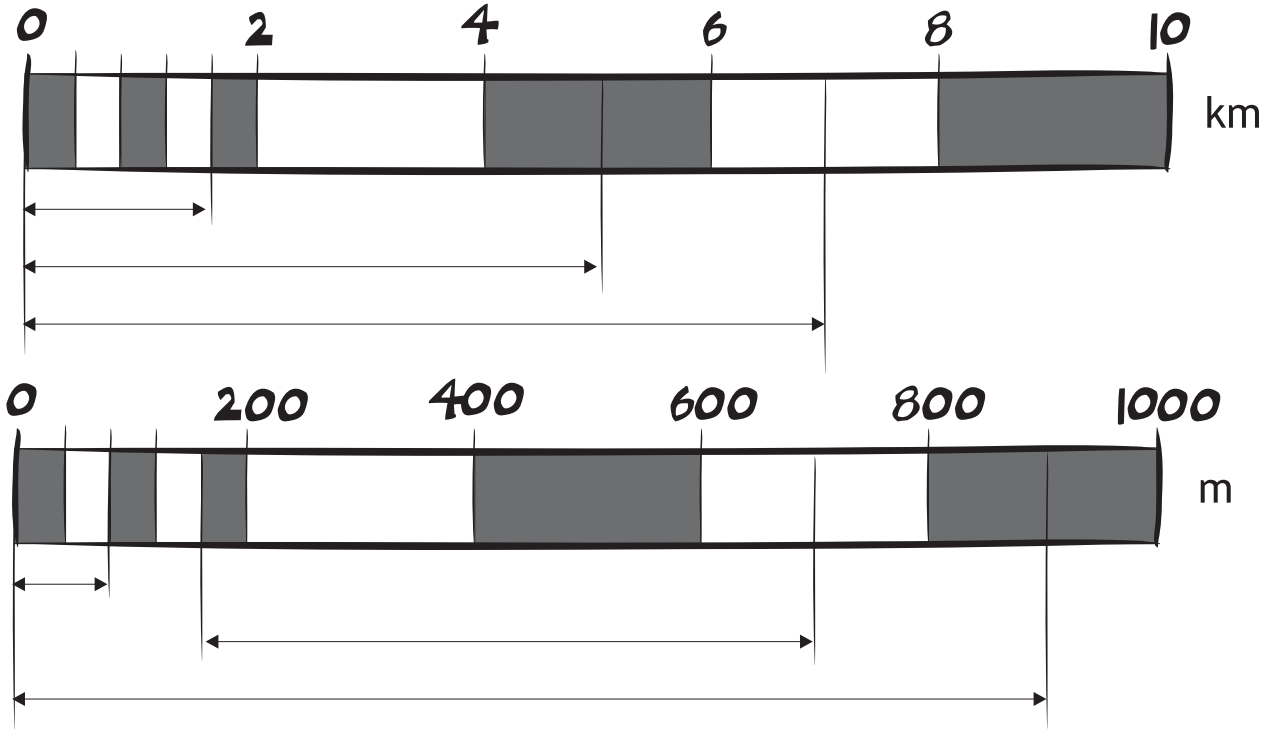
What is 1 kg in grams? _____

Change 3 litres into ml. **3** litres = _____ ml

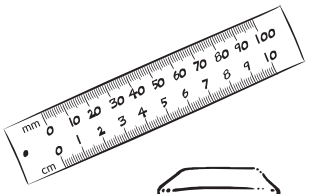
2000 g = _____ kg **500** m = _____ km

8 kg = _____ g **1000** mm = _____ cm

Write the real distances indicated on each map scale.



UNITS OF MEASURE

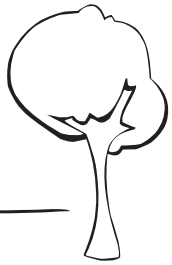


Circle all the units that measure length.
kg, mm, l, g, ml, cm, m, km.

Circle all the units that measure mass.
km, m, cm, ml, g, l, mm, kg.

Circle all the units that measure volume.
ml, g, m, mile, cm^3, l.

What units of measure would you use to measure:



The height of a tree. _____

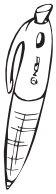
The amount of juice in a glass. _____

Your mass. _____

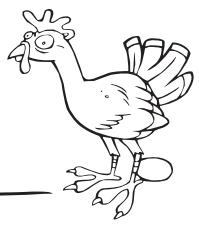
The distance from home to your school. _____

The amount of water in a swimming pool. _____

The mass of an apple. _____

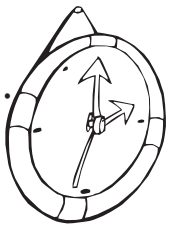


The length of a pen. _____



A chicken's mass. _____

Fill in the missing quantities.



1 hour = ☐ minutes

$\frac{1}{4}$ hour = ☐ minutes

0.5 hour = ☐ minutes

$1\frac{1}{2}$ hours = ☐ minutes

$3\frac{3}{4}$ hours = ☐ minutes

20 minutes = ☐ seconds

$2\frac{1}{4}$ minutes = ☐ seconds

$1\frac{1}{5}$ minutes = ☐ seconds

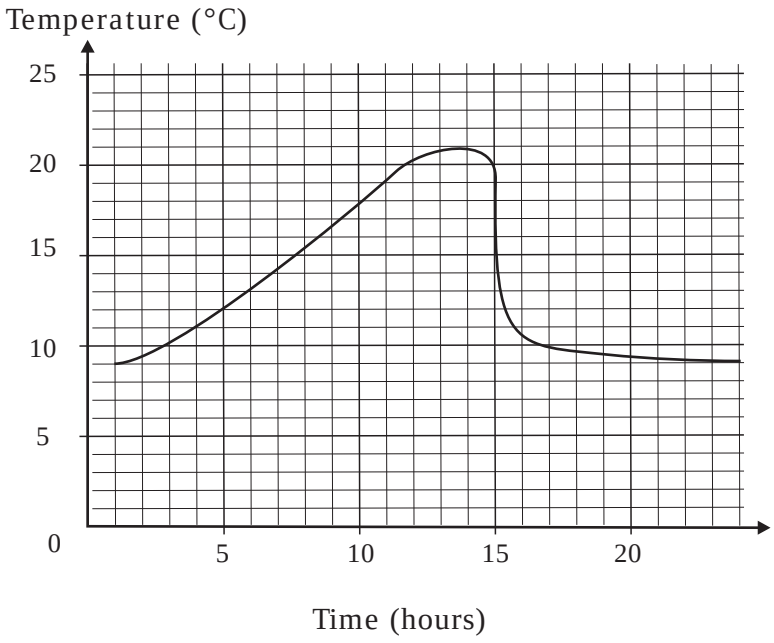
24 hours = ☐ day

or

pm = morning / afternoon

am = morning / afternoon

The graph below shows the variation in temperature over one day. The temperature was measured each hour starting at 1am.



What was the temperature at 10am? _____

When was it the hottest?

_____

During which time was the temperature rising?

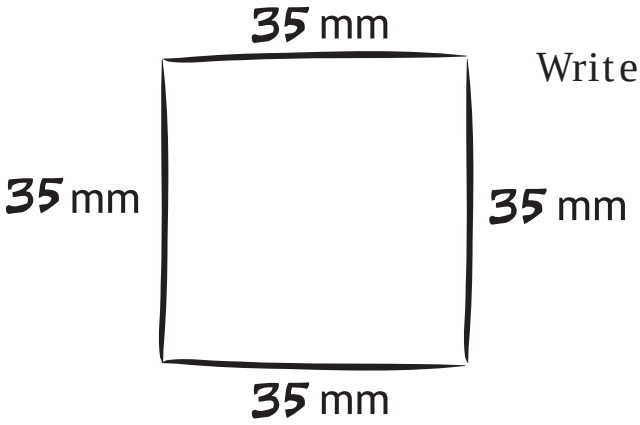
_____

There was a rainstorm during the day. When do you think that happened?

_____

PERIMETERS

The perimeter of a shape is the total distance around the shape.
To calculate the perimeter add up all the side lengths.



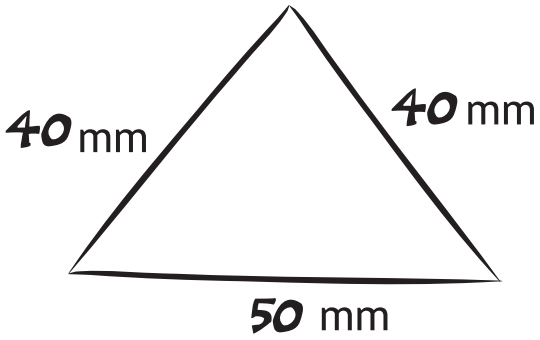
Write down the lengths of all the sides.

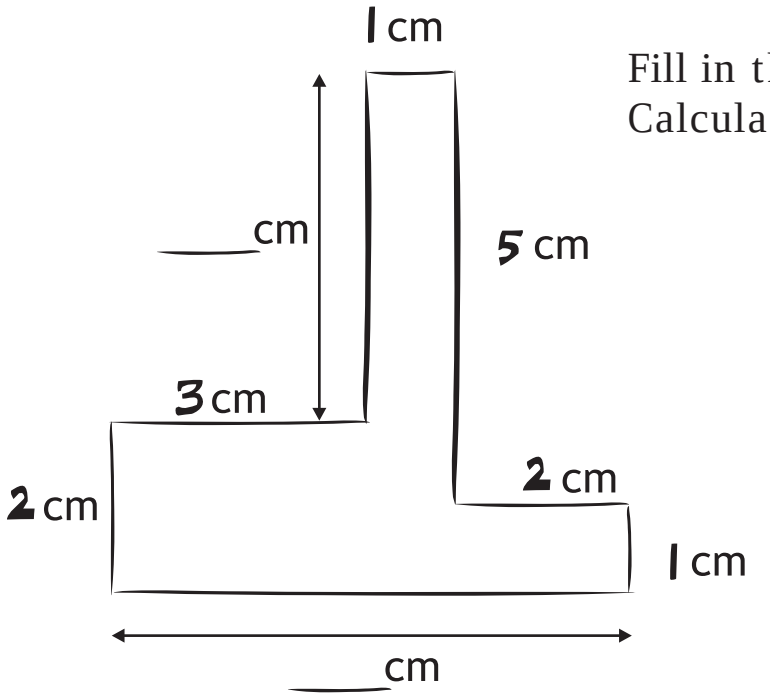
____ + ____ + ____ + ____

Perimeter = ____ mm

____ + ____ + ____

Perimeter = ____ mm

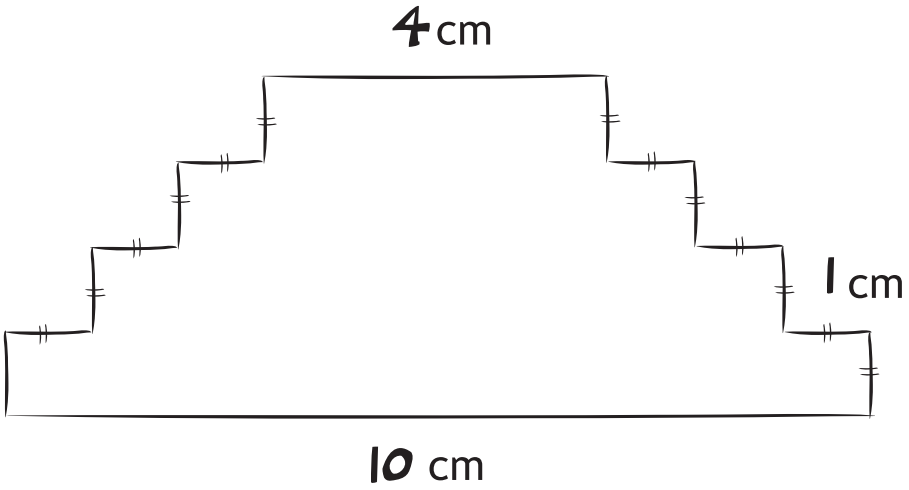




Fill in the missing measurements.
Calculate the perimeter.

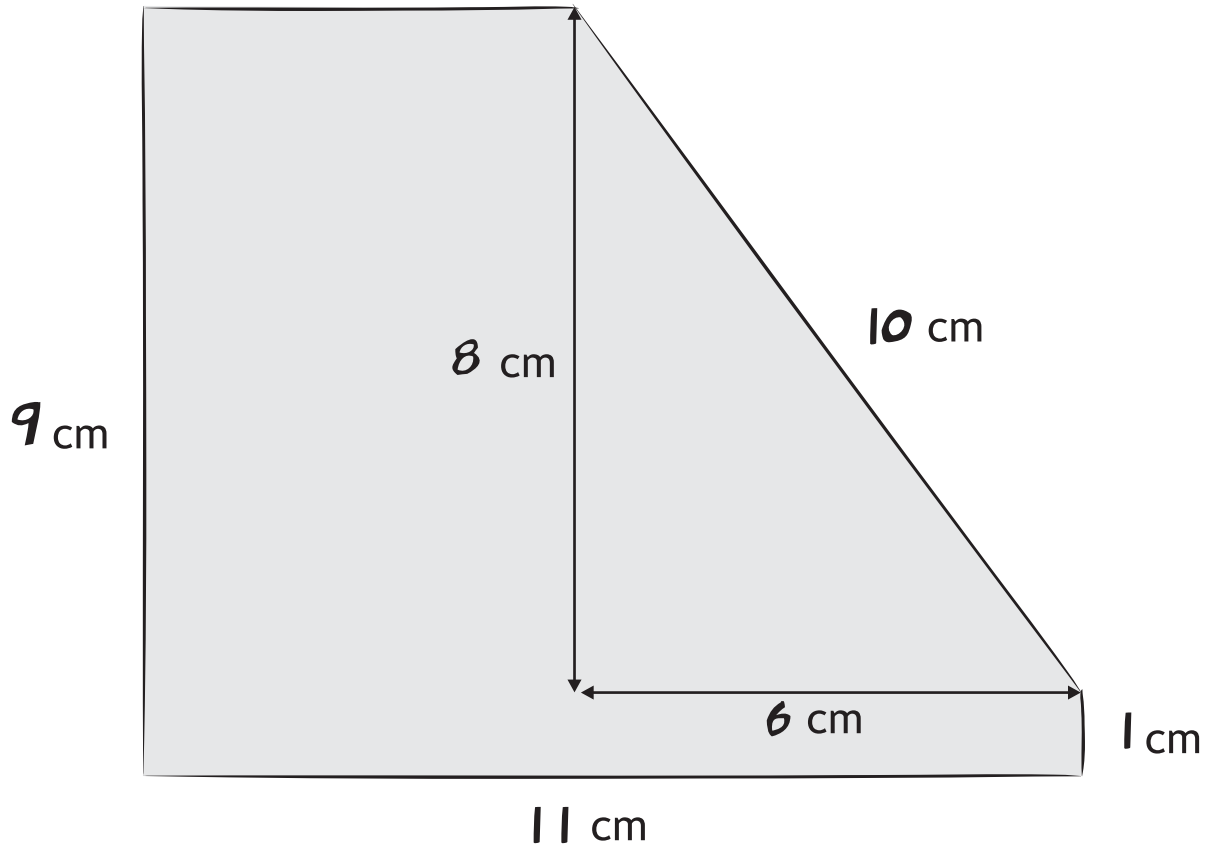
Perimeter = ____ cm

Fill in the missing measurements. Calculate the perimeters.



Perimeter = ____ cm

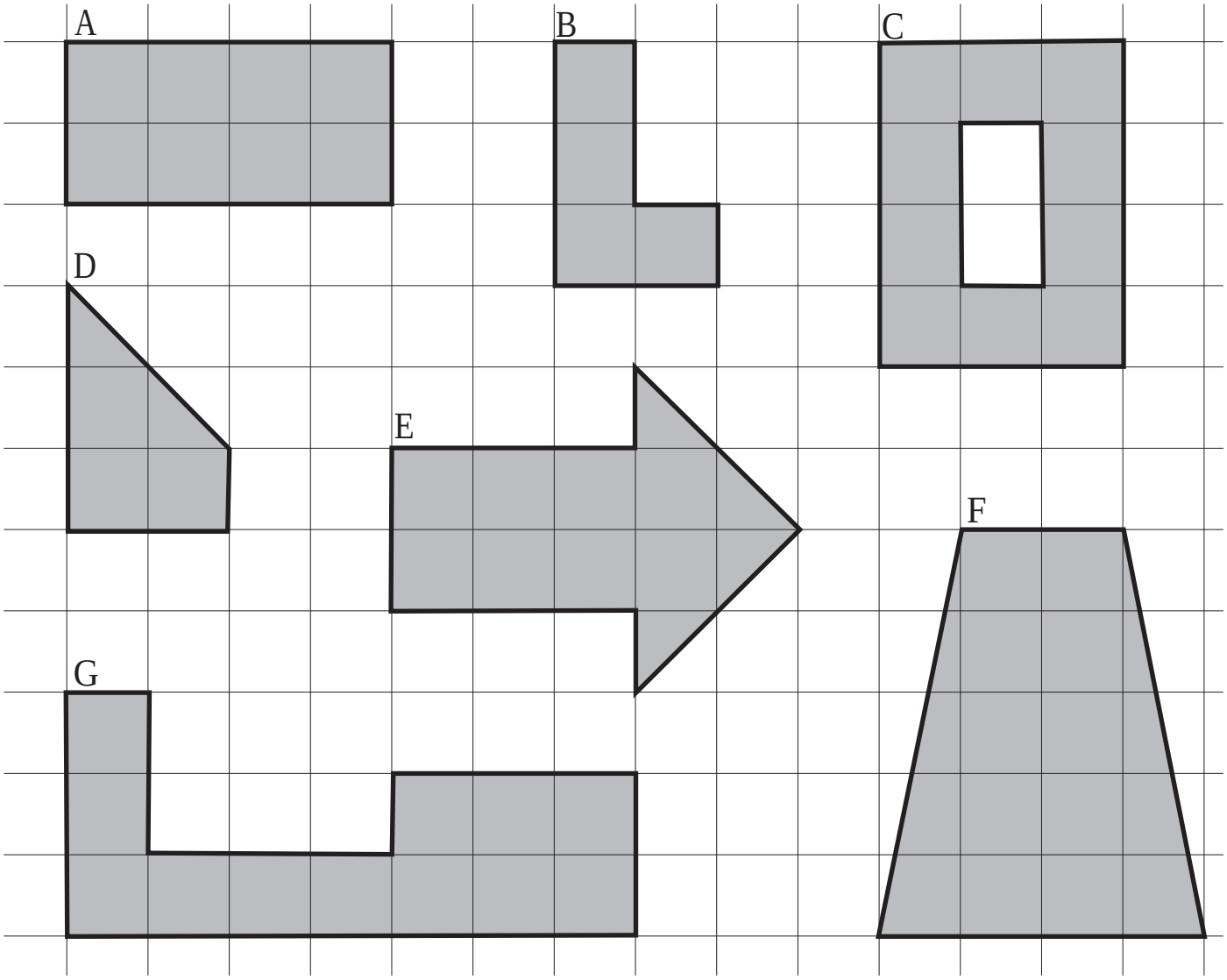
Means that these sides all have the same length.



Perimeter = ____ cm

AREA

How many square centimetres make up each shape?
Count the squares and give the area of each shape.



= 1 square centimetre (1 sq. cm)

Area A = _____ sq. cm

Area B = _____ sq. cm

Area C = _____ sq. cm

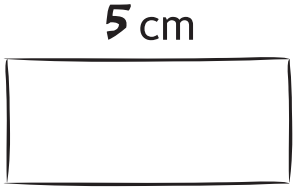
Area D = _____ sq. cm

Area E = _____ sq. cm

Area F = _____ sq. cm

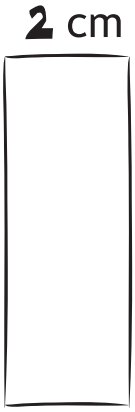
Area G = _____ sq. cm

The area of a rectangle is obtained by multiplying the length by the width. Make sure both are measured with the same units.

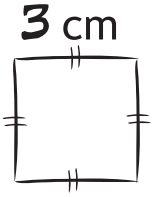


Area = L × W
= 5 cm × 3 cm
= 15 sq. cm
or = 15 cm²

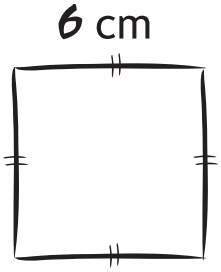
Find the areas.



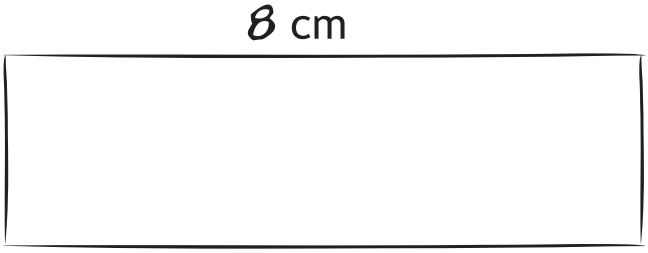
Area = L × W
=
=



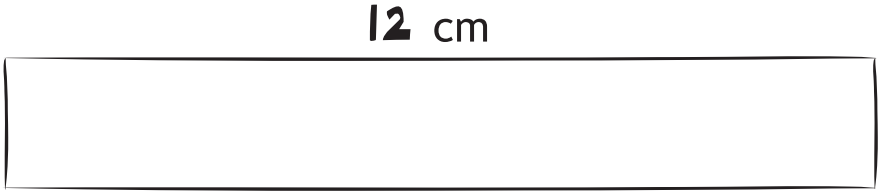
Area = L × W
=
=



Area = L × W
=
=



Area = L × W
=
=

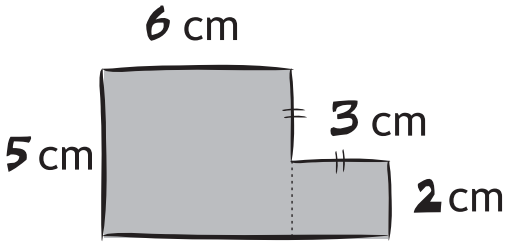


Area = L × W
=
=

Note: The figures on this page are not drawn to scale.

AREA

Some figures are made up of different shapes. To find the shaded area calculate the area of each separate shape, then add (or subtract) to find the total area.

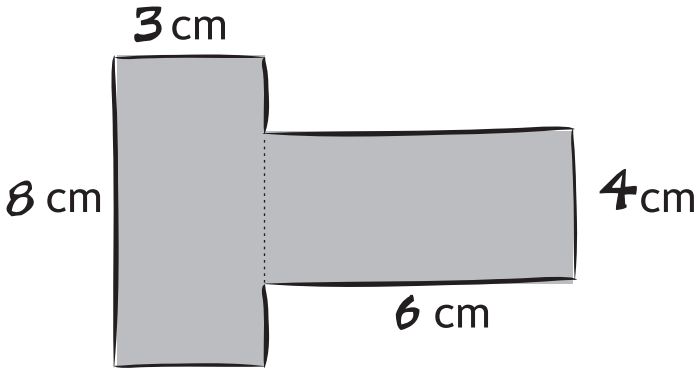


Area = Area 1 + Area 2

= L × W + L × W

$= 6 \times 5 + 3 \times 2$

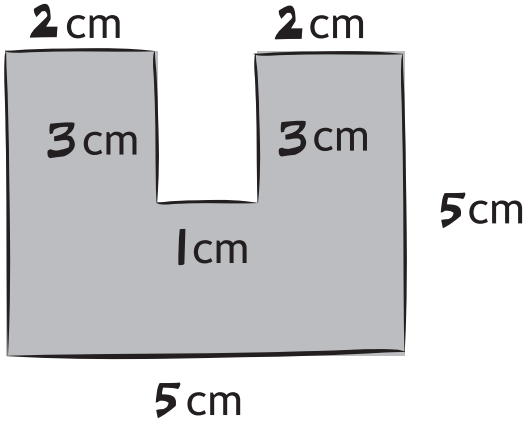
$= 36 \ cm^2$



Area = L × W + L × W

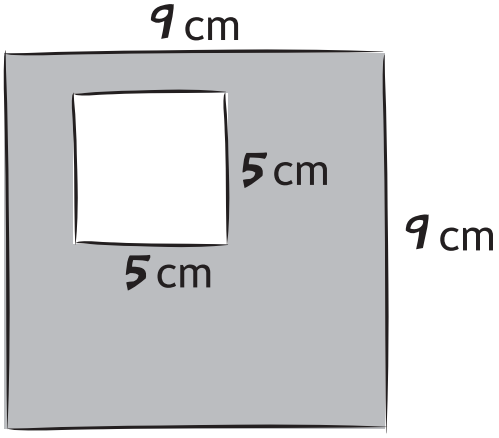
=

=



Area =

Area =



MONEY CALCULATIONS

$25.60 + $12.30 =	$14.80 + $13.10 =	$21.20 + $16.55 =
$18.25 + $15.55 =	$16.85 + $10.95 =	$24.45 + $14.55 =
$19.95 + $19.95 =	$24.85 + $25.95 =	$39.75 + $16.55 =

Add the following amounts to make $1.

10c + _____ = $1	35c + _____ = $1
_____ + 50c = $1	_____ + 55c = $1
30c + _____ = $1	75c + _____ = $1
_____ + 60c = $1	_____ + 15c = $1
80c + _____ = $1	5c + _____ = $1

MONEY CALCULATIONS

Subtract the following.

$5 − $1·25 = _____

$5 − $2·80 = _____

$5 − $3·55 = _____

$5 − $2·45 = _____

$5 − $4·15 = _____

$10 − $4·55 = _____

$10 − $3·75 = _____

$10 − $2·95 = _____

$10 − $1·15 = _____

$10 − $7·35 = _____

Count and write each amount in numerals and in words.

=

_____

_____

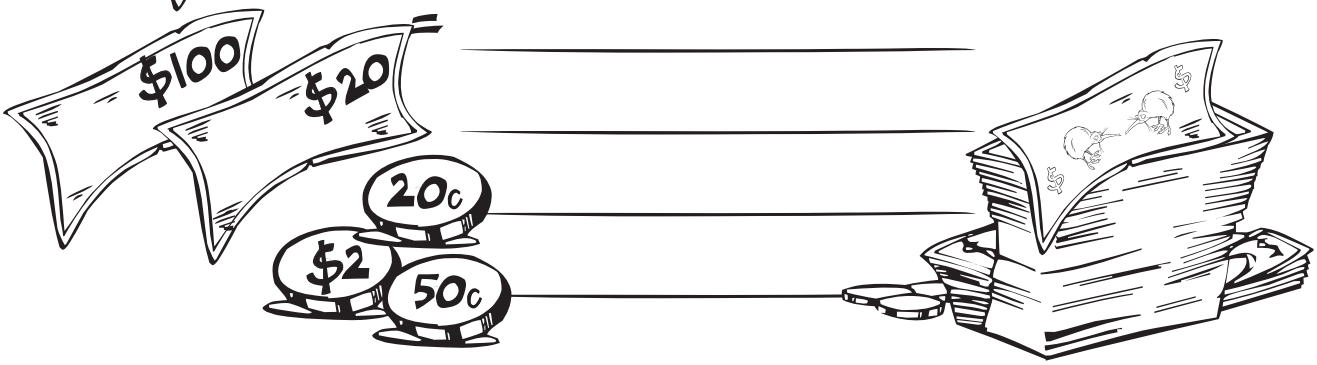
_____

=

_____

_____

_____



=

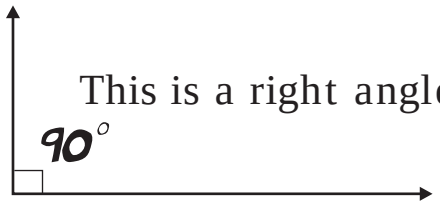
_____

_____

_____

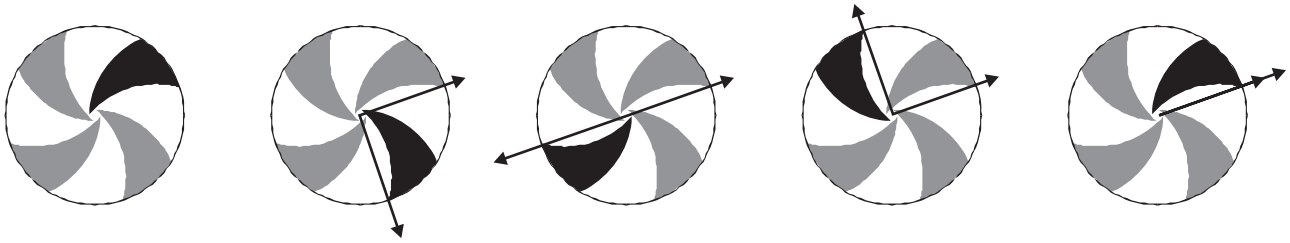
_____

ANGLES



This is a right angle.

This is a straight angle.



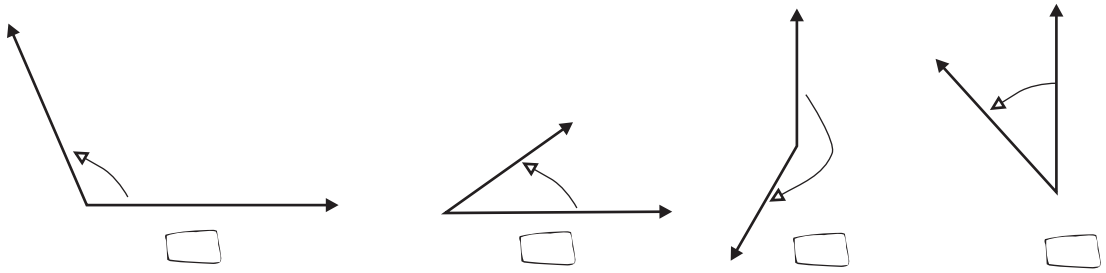
Quarter turn 90°

Half turn 180°

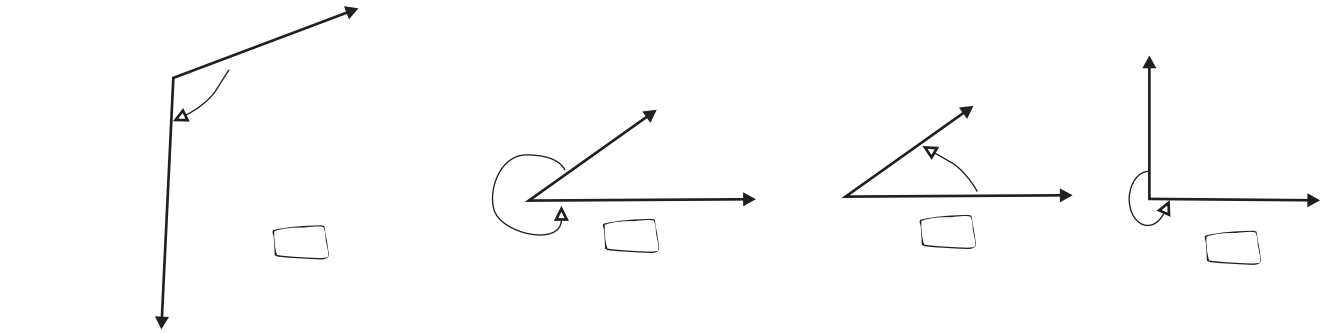
Three quarter turn 270°

Full turn 360°

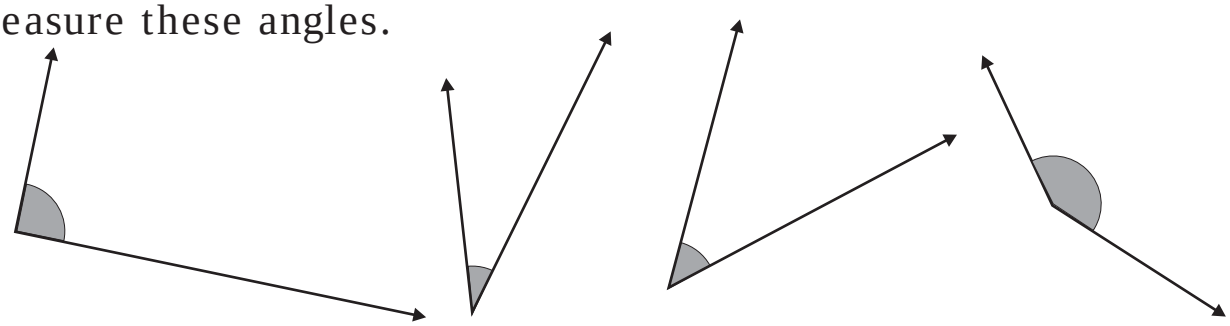
✗ or ✓ Which of these angles is bigger than 90°?



✗ or ✓ Which of these angles is bigger than 180°?



Measure these angles.



ANGLES

Write the value then draw each angle.

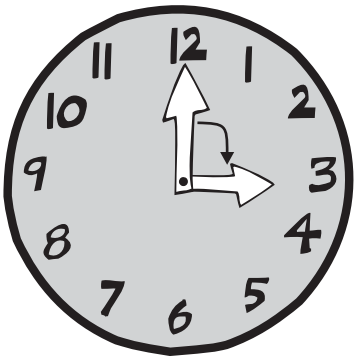
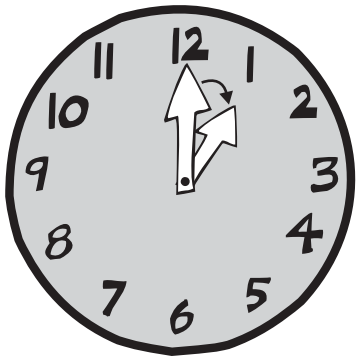
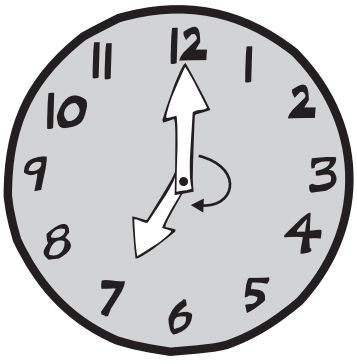
Half a right angle.

One and a half right angles.

Three right angles.

Three and a half right angles.

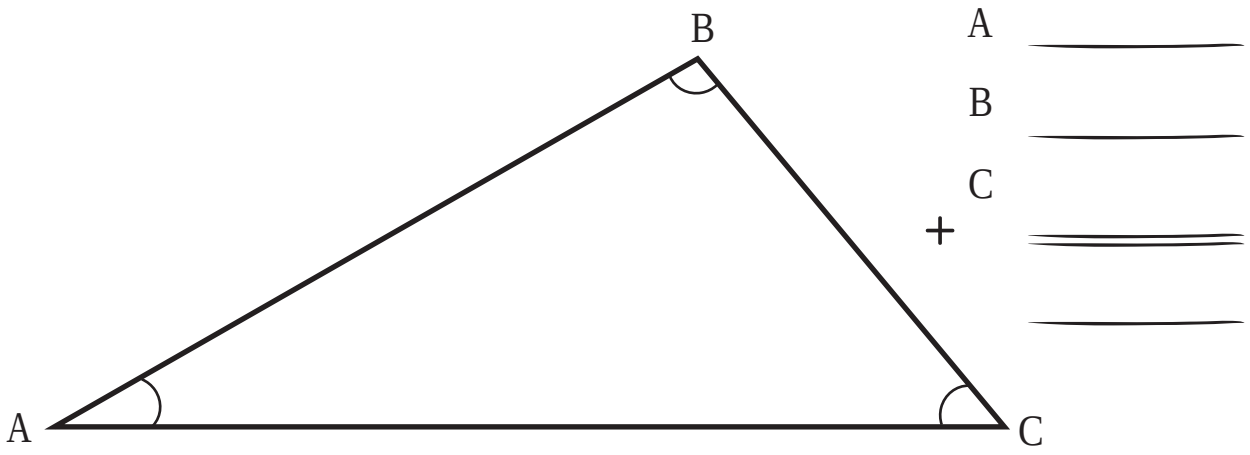
Write down the time and angles formed on each clock.

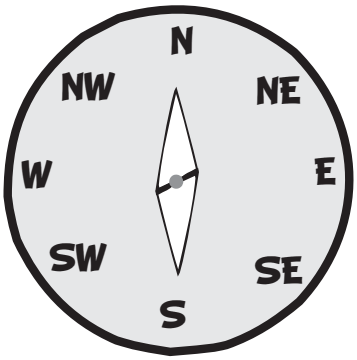
Time _____ _____ _____

Angle _____ _____ _____

Measure the angles of the triangle then add them up.
Draw each angle in the triangle.



Measure or calculate the angles between these compass directions.



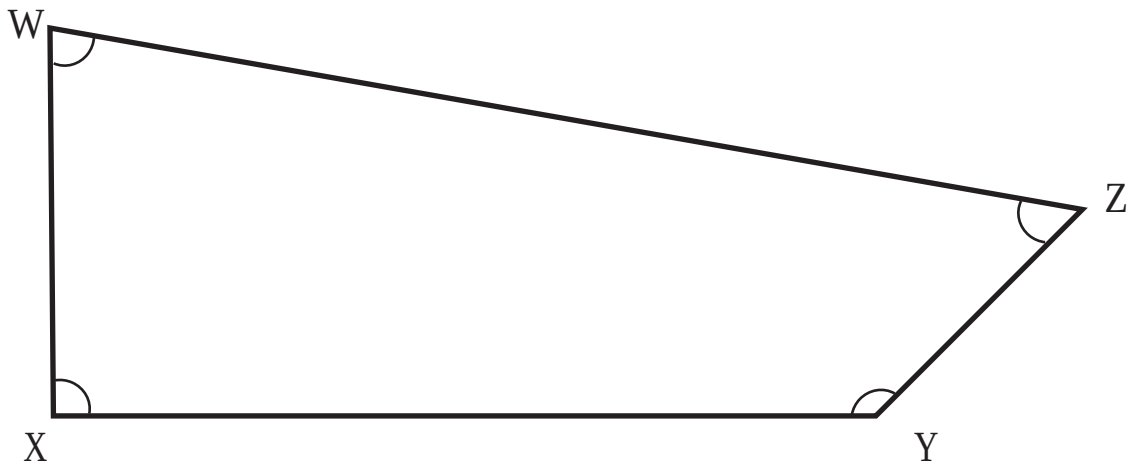
South and West

North and North East

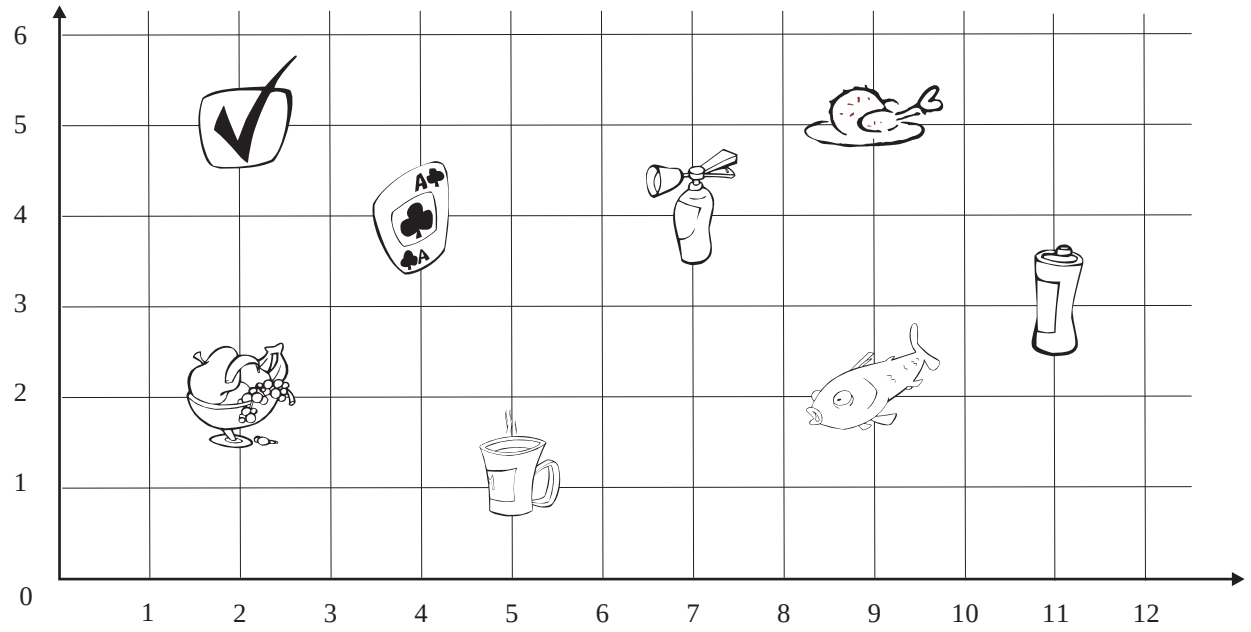
East and West

North and South East.

Measure the angles of the quadrilateral then add them up.



GRID POSITIONS



When giving the position of an object give the horizontal → position then the vertical position. ↑

Give the position of the:

Fire extinguisher (7 , 4)

Coffee mug (___ , ___)

Fruit Bowl (___ , ___)

Chicken meal (___ , ___)

Battery (___ , ___)

Tick box (___ , ___)

Fish (___ , ___)

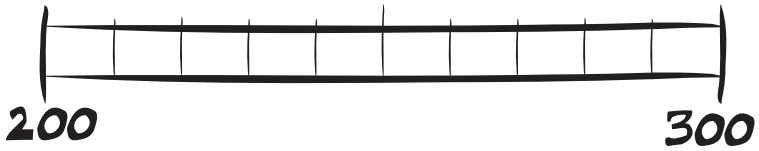
Ace of clubs (___ , ___)

On the grid above draw a square at (1, 6), a circle at (3, 3), a triangle at (7, 2), a rectangle at (11, 5) and a pentagon at (9, 4).

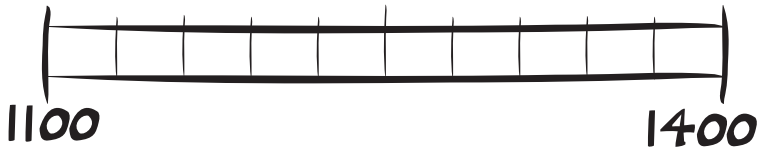
READING SCALES

Use the number lines to find the half way point between:

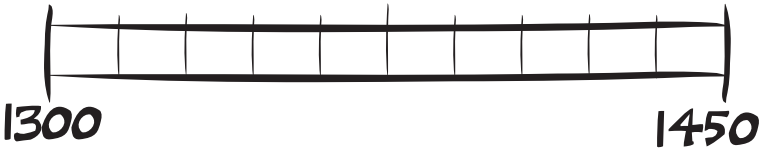
200 and 300 = _____



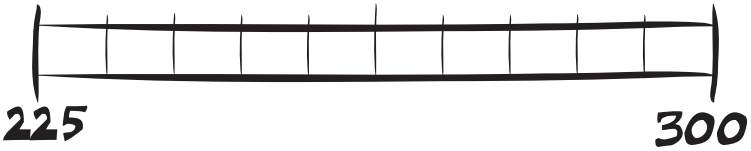
1100 and 1400 = _____



1300 and 1450 = _____



225 and 300 = _____



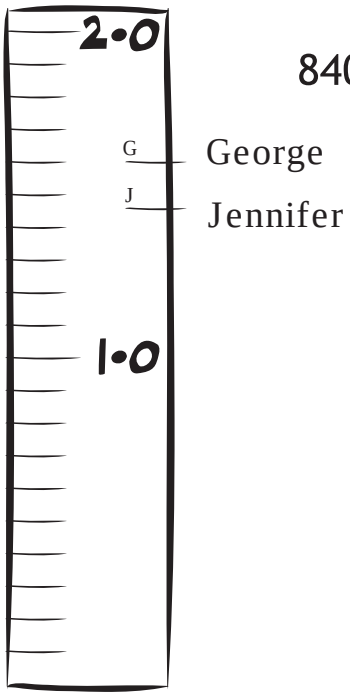
Find the half way point between these numbers:

500 and 700 _____

285 and 485 _____

840 and 960 _____

180 and 505 _____



George and Jennifer have marked their heights on the wall. What are their heights?

George = _____ m

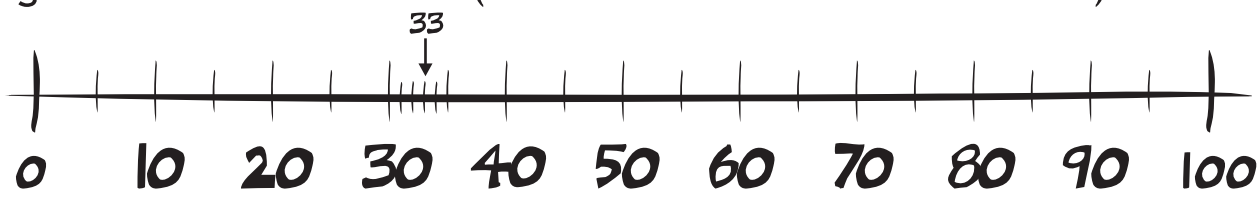
Jennifer = _____ m

Mat is 1.75m tall. Mark this on the ruler.

ROUNDING

When rounding look at the last digit.
1, 2, 3, and 4 get rounded down; 5, 6, 7, 8 and 9 get rounded up.

Indicate these numbers on the number line.
Round each to the nearest 10.
e.g 33 to nearest 10 = 30 (it is closer to 30 than it is to 40)

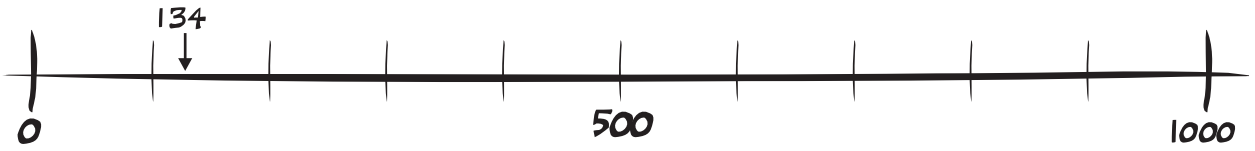


45 to nearest 10 = _____ 57 to nearest 10 = _____

68 to nearest 10 = _____ 71 to nearest 10 = _____

84 to nearest 10 = _____ 96 to nearest 10 = _____

Indicate these numbers on the number line.
Round each to the nearest 100. e.g 134 to nearest 100 = 100



219 to nearest 100 = _____ 381 to nearest 100 = _____

468 to nearest 100 = _____ 650 to nearest 100 = _____

822 to nearest 100 = _____ 954 to nearest 100 = _____

Round these numbers to make the sums easier.
Then compare the approximate answer with the actual answer.

509 + 492	500 + 500 = 1000 Actual answer = 1001
23 + 47 ⇒ _____	= _____ Actual answer =
65 + 32 ⇒ _____	= _____ Actual answer =
18 + 44 ⇒ _____	= _____ Actual answer =
52 + 69 ⇒ _____	= _____ Actual answer =
410 + 23 ⇒ _____	= _____ Actual answer =
625 + 44 ⇒ _____	= _____ Actual answer =
567 + 59 ⇒ _____	= _____ Actual answer =
508 + 299 ⇒ _____	= _____ Actual answer =
460 + 320 ⇒ _____	= _____ Actual answer =
250 + 140 ⇒ _____	= _____ Actual answer =

UNDERSTANDING × AND ÷

Complete each of the following:

$15 + 15 + 15 + 15 + 15 + 15 = \_\_ \times 15$

$= \_\_\_\_$

$22 + \_\_\_\_\_ = 4 \times 22$

$= \_\_\_\_$

$18 + 18 + 18 + 18 + 18 + 18 + 18 + 18 = \_\_ \times 18$

$= \_\_\_\_$

$12 + 12 + 12 + 12 + 12 = \_\_ \times 12$

$= \_\_\_\_$

$120 - 30 - 30 - 30 - 30 = 0$

$\therefore 120 \div 30 = \_\_$

$44 - \_\_\_\_\_ = 0$

$\therefore 44 \div \_\_ = 4$

$72 - \_\_\_\_\_ = 0$

$\therefore 72 \div \_\_ = 2$

$81 - 27 - 27 - 27 = 0$

$\therefore 81 \div \_\_ = 3$

MULTIPLICATION STRATEGIES

To make multiplication easier, split the numbers into units, tens and hundreds, multiply each part then add the products.

59 × 3

9 × 3 = 27

50 × 3 = 150

177

67 × 5

7 × 5 =

60 × 5 =

23 × 6

3 × 6 =

20 × 6 =

71 × 7

1 × 7 =

70 × 7 =

98 × 2

8 × 2 =

90 × 2 =

27 × 4

7 × 4 =

20 × 4 =

245 × 9

5 × 9 =

40 × 9 =

200 × 9 =

548 × 6

8 × 6 =

40 × 6 =

500 × 6 =

398 × 7

8 × 7 =

90 × 7 =

300 × 7 =

847 × 8

7 × 8 =

40 × 8 =

800 × 8 =

249 × 5

9 × 5 =

40 × 5 =

200 × 5 =

893 × 4

3 × 4 =

90 × 4 =

800 × 4 =

PEASANT MULTIPLICATION

The following is called the Russian Peasant Method of Multiplication.
e.g. 15×26

STEP 1 Put the numbers in two columns. Double each consecutive number in column 1. Halve each consecutive number in Column 2 (omit remainders).

STEP 2 Add all the numbers in column 1 which are opposite odd numbers in column 2.

STEP 1

Column 1	Column 2
15	26
30	13
60	6
120	3
240	1

STEP 2

$$\begin{array}{r} 30 \\ 120 \\ +\ 240 \\ \hline 390 \end{array}$$

THE ANSWER

$15 \times 26 = 390$

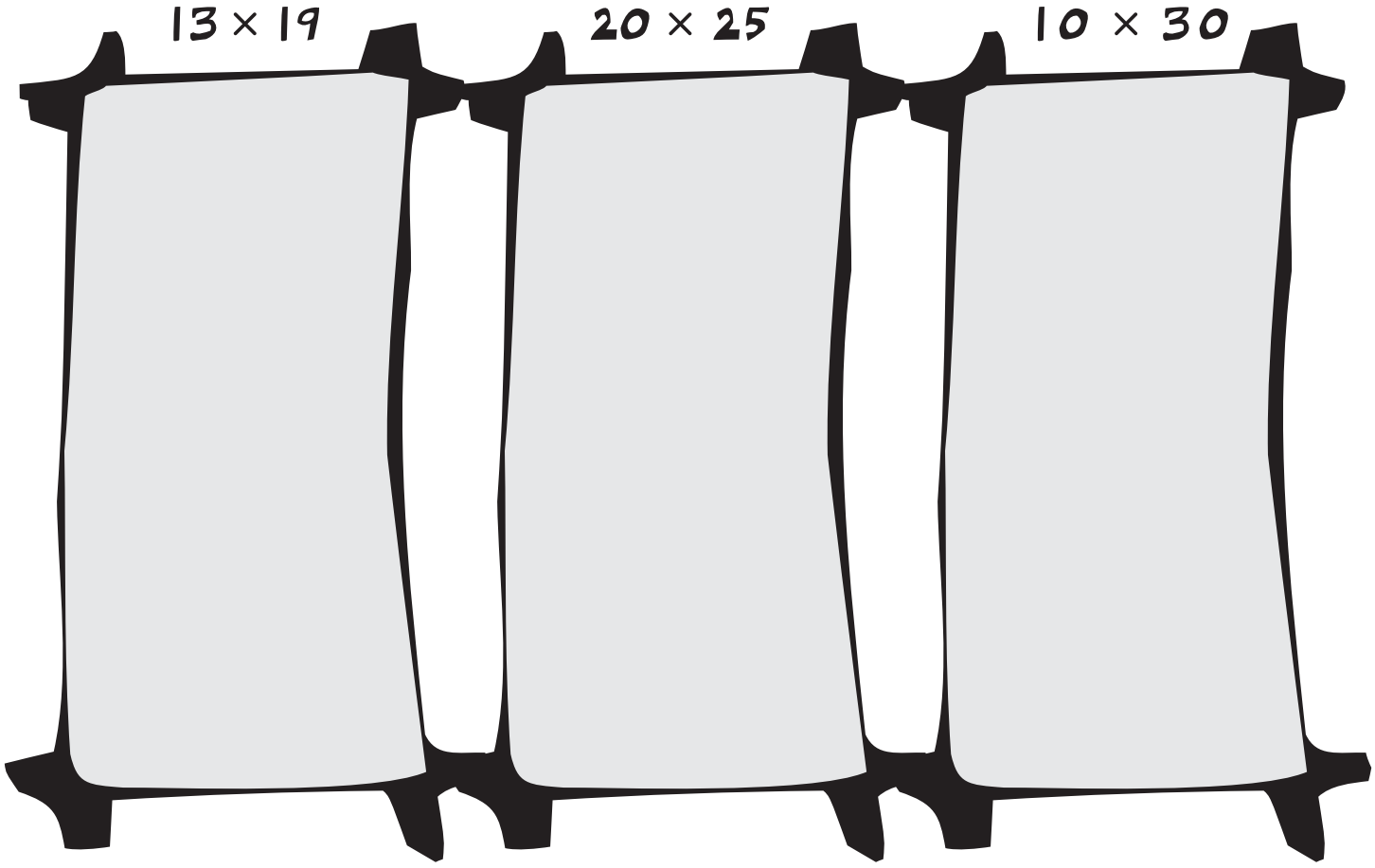
Use the Russian Peasant Method of Multiplication to multiply:

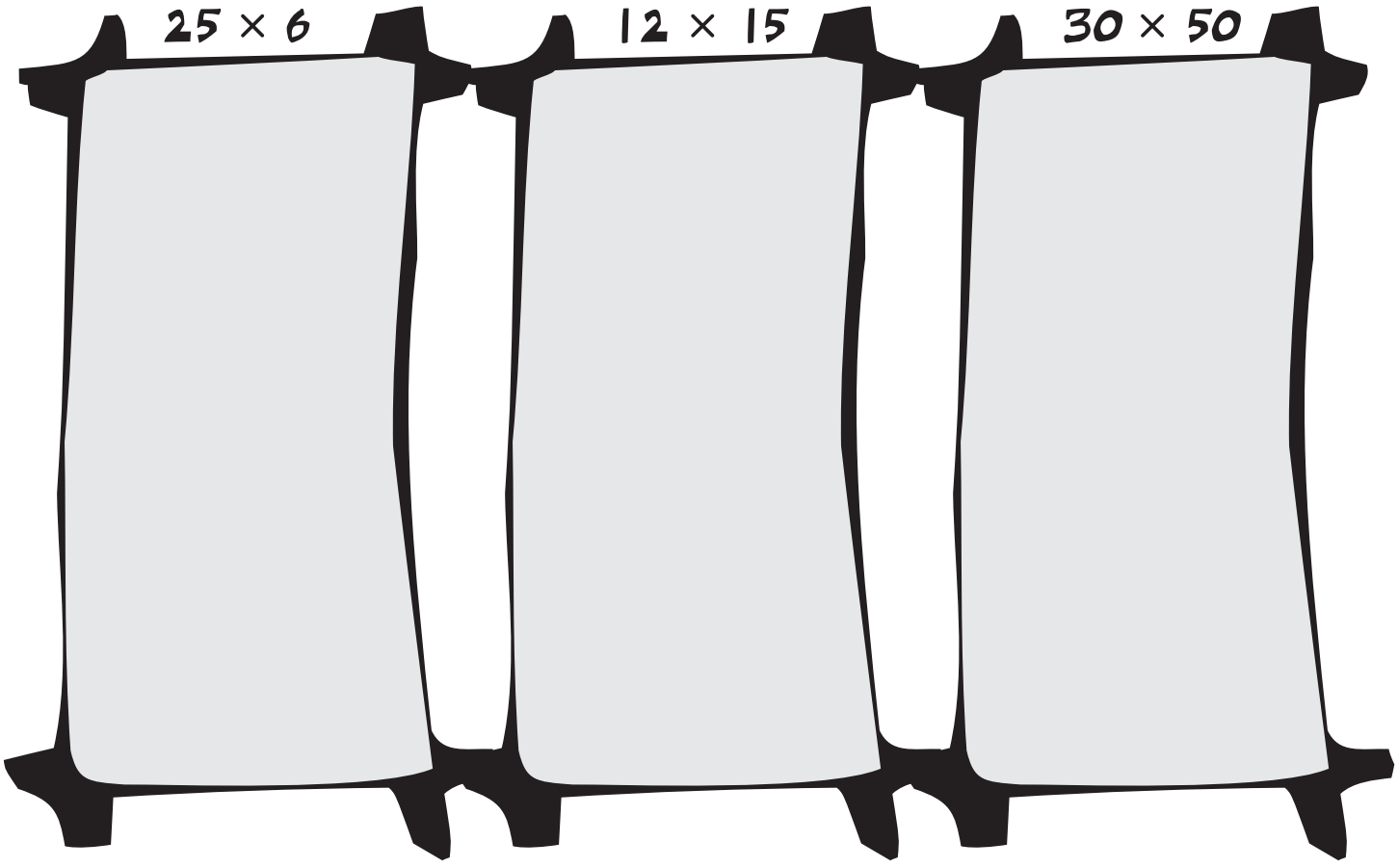
33×18

10×25

20×41

Use the Russian Peasant Method of Multiplication to multiply:

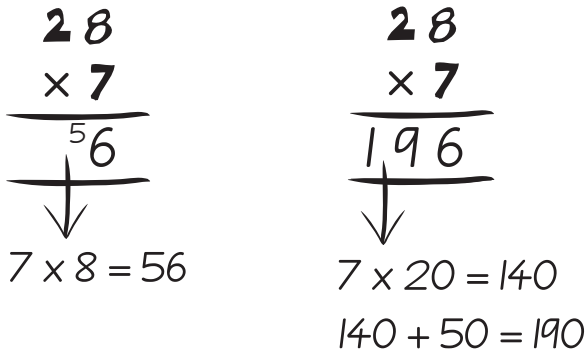




MULTIPLICATION

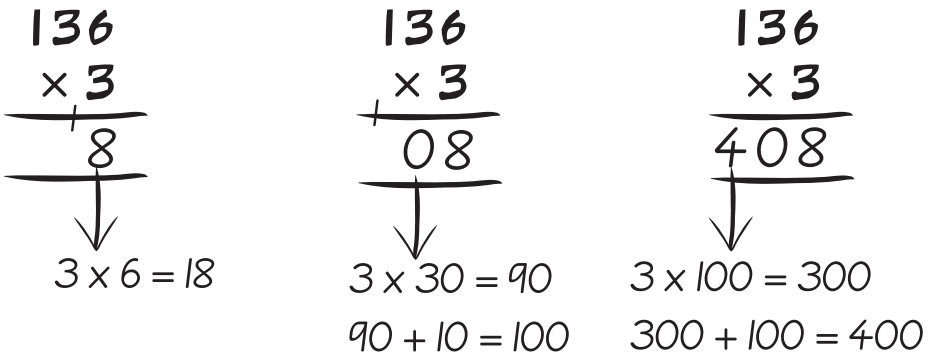
When multiplying by a single digit number:

1. Multiply the number by each digit of the larger number.
2. Each time you get an answer of 10 or more carry the left hand digits to the next column (similar to addition).



Multiply these without using a calculator.

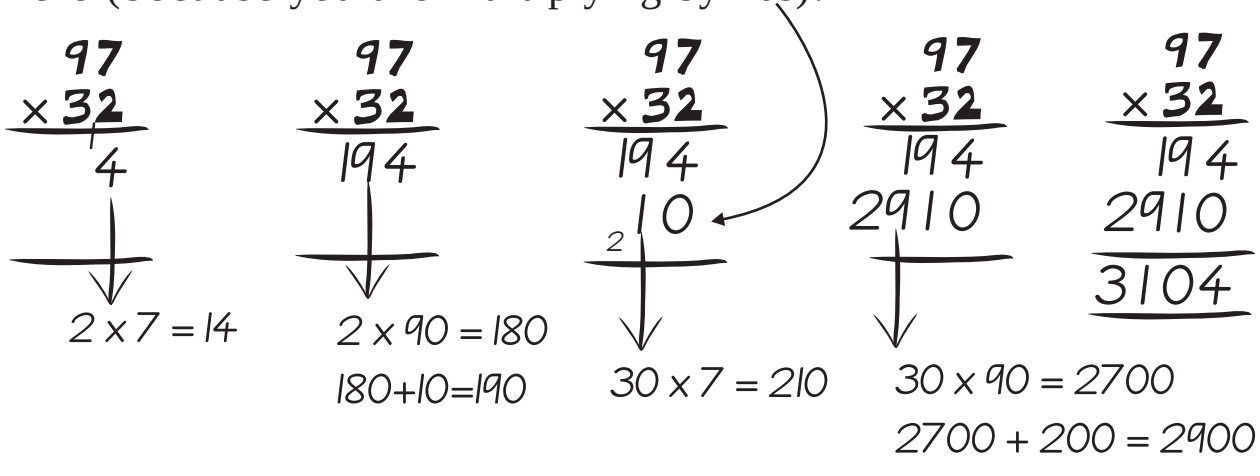
63 ×4	47 ×3	25 × 6	33 × 5
52 ×8	64 ×7	86 ×9	78 ×2
39 ×7	37 ×6	98 ×3	85 ×5
58 ×4	96 ×8	56 ×2	24 ×9



Multiply these without using a calculator.

412 ×5	235 ×7	156 ×3	175 ×4
325 ×6	179 ×5	423 ×4	216 ×7
524 ×6	453 ×8	325 ×9	475 ×7
282 ×9	143 ×8	234 ×5	243 ×7

When multiplying by a two digit number start the second line with a zero (because you are multiplying by 10s).



MORE MULTIPLICATION

Multiply these without using a calculator.

47 × 23	71 × 32	54 × 16	58 × 21
63 × 26	46 × 37	32 × 25	24 × 18
243 × 27	251 × 16	278 × 32	362 × 22
269 × 29	407 × 18	135 × 25	383 × 34

DIVISION

$$\begin{array}{r} 4 \\ 6\overline{)283} \\ -24\downarrow \\ \hline 4 \end{array}$$

$6 \times 4 = 24$

$28 - 24 = 4$

$$\begin{array}{r} 47 \\ 6\overline{)283} \\ -24\downarrow \\ \hline 43 \\ -42 \\ \hline 1 \end{array}$$

$6 \times 7 = 42$

$43 - 42 = 1$ remainder

$$\begin{array}{r} 47\frac{1}{6} \\ 6\overline{)283} \\ -24\downarrow \\ \hline 43 \\ -42 \\ \hline 1 \end{array}$$

Use the method above to do these division sums.

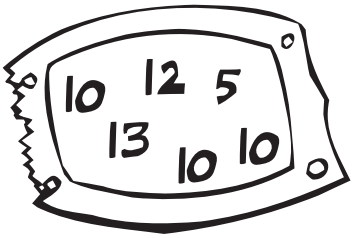
$5\overline{)358}$ $8\overline{)193}$ $9\overline{)470}$

$6\overline{)535}$ $3\overline{)144}$ $7\overline{)531}$

$4\overline{)729}$ $2\overline{)526}$ $5\overline{)248}$

AVERAGES

An average helps to summarise data. One type of average is the mean. The example below shows how to find the mean of a set of numbers:



1. Find the total.

$10 + 13 + 12 + 5 + 10 + 10 = 60$

2. Divide the total by the number of values.

$60 \div 6 = 10$ Mean = 10

Find the mean of each set of numbers:

3 10 5

15 7 9 5 3 15

3 7 5 13

20 7 9 12 7

10 17 13 8

1 1 1 3 8 8 4 6

16 32 45 27 10 50

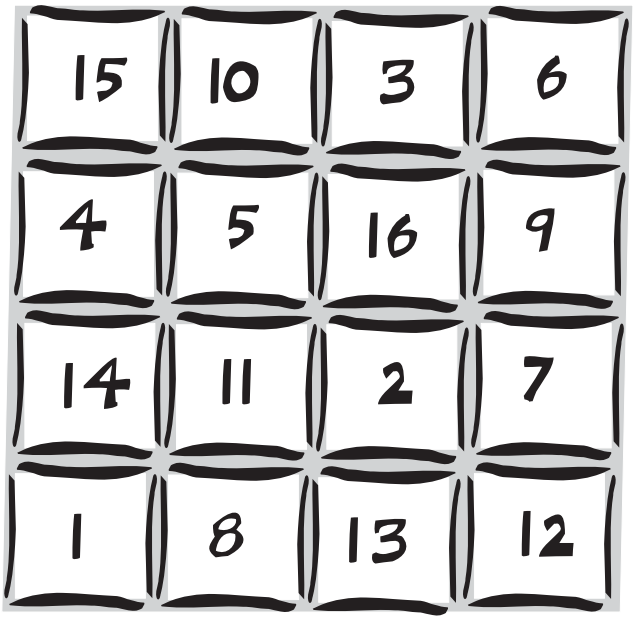
22 25 30 23

86 83 92

12 16 15 14 10 11 6

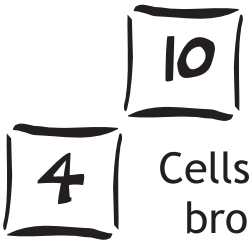
THAT'S DIABOLICAL

The numbers in the square below form a Diabolic Magic Square.



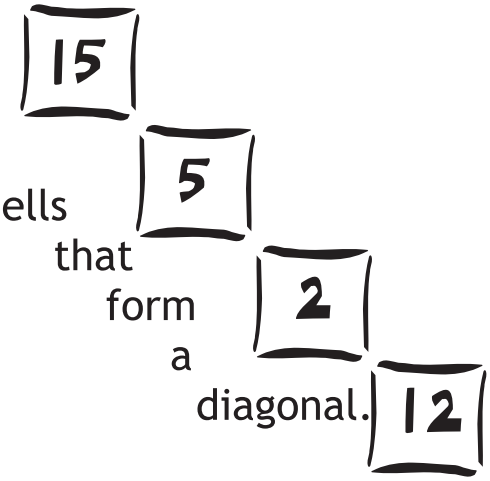
Four cells that form a square.

Cells that form a row.

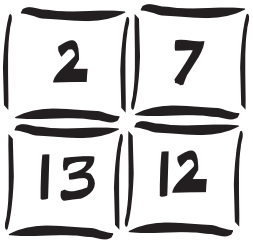


Cells that form a bro ken diagonal.

Cells that form a column.



Cells that form a diagonal.



Four cells that form a square.

Using the Diabolic Magic Square add up:

The numbers in any diagonal. Sum = ...

The numbers in any broken diagonal. Sum = ...

The numbers in any column. Sum = ...

The numbers in any row. Sum = ...

Any group of four cells that form a square Sum = ...

What do all the sums have in common?

.....

Here is the template to make a magic cube. Copy the template onto a big piece of cardboard and make the cube.

			20	4	18						
			16	21	5						
			6	17	19						
20	16	6	6	17	19	19	5	18	18	4	20
13	3	26	26	1	15	15	25	2	2	27	13
9	23	10	10	24	8	8	12	22	22	11	9
			10	24	8						
			23	7	12						
			9	11	22						

Each row and column adds up to:

.....

There is one number which you cannot see because it is hidden in the middle of the cube.

What is this number? .....

PLACE VALUE

Write each as digits in the place-value table.

a. 

b. 

c. Five thousand, nine hundred and twenty seven.

d. 9 x 1000 + 3 x 100 + 2 x 1

e. 27 hundreds + 7 tens + 3 units

	TH	H	T	U
a.		4	3	9
b.	2	4	3	6
c.	5	9	2	7
d.	9	3	0	2
e.	2	7	7	3

Write these numbers as digits and list them in decreasing order: one thousand two hundred and eighteen, four hundred and six, eighty nine, five hundred and thirty, two thousand four hundred and forty four.

2444 1218 530 406 89

Write these as numbers.	
$3\times1000+8\times100+6\times10=3860$	$4000+50=4050$
$5\times100+7\times10=570$	$900+3=903$
$1\times1000+4\times10=1040$	$1000+300+4=1304$
$2\times1000+9\times1=2009$	$6000+40=6040$
$9\times1000+2\times100=9200$	$3000+600+1=3601$
	$2000+70+1=2071$

5

PLACE VALUE

Write each as digits in the place-value table.

a. 

b. 

c. 

	TH	H	T	U
a.	5	7	5	6
b.	2	1	3	0
c.	9	4	0	1

Write these numbers with words.

4027 Four thousand and twenty seven

6103 Six thousand one hundred and three

1009 One thousand and nine

8531 Eight thousand five hundred and thirty one

Write these as expanded numbers.

2415 = 2×1000 + 4×100 + 1×10 + 5×1

3284 = 3×1000 + 2×100 + 8×10 + 4×1

5500 = 5×1000 + 5×100

962 = 9×100 + 6×10 + 2×1

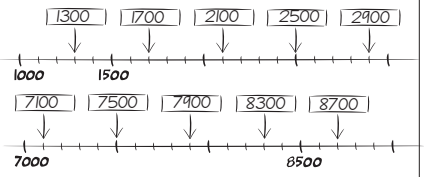
1721 = 1×1000 + 7×100 + 2×10 + 1×1

4059 = 4×1000 + 5×10 + 9×1

6

NUMBERS

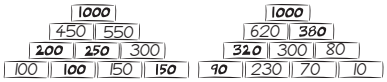
Write the number that is represented at the arrow point.



Round the numbers

Number	Rounded to the nearest: ten	hundred	thousand
3	0	0	0
26	30	0	0
599	600	600	1000
573	570	600	1000
9851	9850	9900	10 000
1090	1090	1100	1000
2008	2010	2000	2000

Complete the number pyramid.
The sum of any two numbers is the number directly above.



7

NUMBER RELATIONSHIPS

Do the additions and subtractions. Look for the relationships.

25 + 35 = 60
125 + 35 = 160
525 + 35 = 560
825 + 35 = 860

76 − 40 = 36
176 − 40 = 136
476 − 40 = 436
976 − 40 = 936

Calculate the products. Look for the relationships.

6 × 5 = 30	60 × 5 = 300	6 × 50 = 300	60 × 50 = 3000
3 × 7 = 21	30 × 7 = 210	3 × 70 = 210	30 × 70 = 2100
8 × 8 = 64	80 × 8 = 640	8 × 80 = 640	80 × 80 = 6400
4 × 9 = 36	40 × 9 = 360	4 × 90 = 360	40 × 90 = 3600

Calculate the products. Look for the relationships.

5 × 100 = 500	100 × 8 = 800	200 × 6 = 1200
5 × 40 = 200	30 × 8 = 240	80 × 6 = 480
5 × 140 = 700	130 × 8 = 1040	280 × 6 = 1680

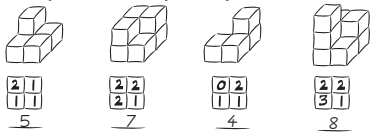
4 × 12 = 48	3 × 13 = 39	7 × 12 = 84
4 × 120 = 480	3 × 130 = 390	7 × 120 = 840
40 × 12 = 480	30 × 13 = 390	70 × 12 = 840

Study the pattern. What would the shape be on the 100th card?

8

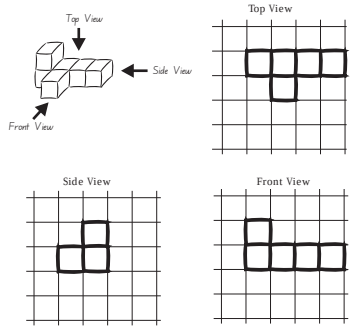
UNIT CUBES

How many unit cubes make up each shape?



5 7 4 8

Draw how this solid would appear from three different views.



9

ADDING FRACTIONS

Add the fractions on this page.
Before adding make sure each fraction has the same denominator.

$\frac{2}{5}+\frac{1}{4}=\frac{8}{20}+\frac{5}{20}=\frac{13}{20}$

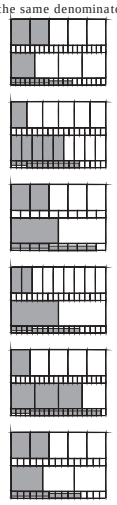
$\frac{1}{6}+\frac{5}{9}=\frac{3}{18}+\frac{10}{18}=\frac{13}{18}$

$\frac{2}{5}+\frac{1}{2}=\frac{4}{10}+\frac{5}{10}=\frac{9}{10}$

$\frac{2}{9}+\frac{1}{2}=\frac{4}{18}+\frac{9}{18}=\frac{13}{18}$

$\frac{1}{5}+\frac{3}{4}=\frac{4}{20}+\frac{15}{20}=\frac{19}{20}$

$\frac{2}{5}+\frac{1}{3}=\frac{6}{15}+\frac{5}{15}=\frac{11}{15}$



10

SUBTRACTING FRACTIONS

Add the fractions on this page.
Before adding make sure each fraction has the same denominator.

$\frac{5}{12}-\frac{1}{3}=\frac{5}{12}-\frac{4}{12}=\frac{1}{12}$

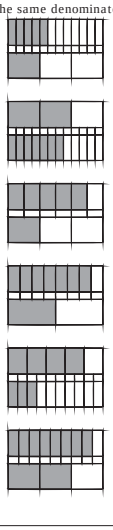
$\frac{2}{3}-\frac{7}{12}=\frac{8}{12}-\frac{7}{12}=\frac{1}{12}$

$\frac{5}{6}-\frac{1}{3}=\frac{5}{6}-\frac{2}{6}=\frac{3}{6}$

$\frac{7}{8}-\frac{1}{2}=\frac{7}{8}-\frac{4}{8}=\frac{3}{8}$

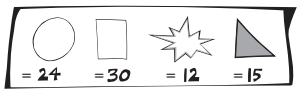
$\frac{4}{5}-\frac{3}{10}=\frac{8}{10}-\frac{3}{10}=\frac{5}{10}$

$\frac{8}{9}-\frac{2}{3}=\frac{8}{9}-\frac{6}{9}=\frac{2}{9}$

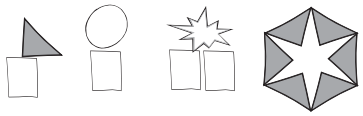


11

VALUE RELATIONS

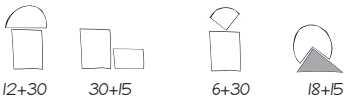


Find the value of each.



15+30 24+30 12+30+30 15x6

45 54 72 90



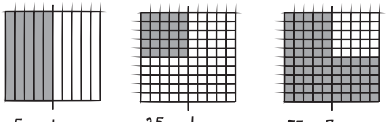
12+30 30+15 6+30 18+15

42 45 36 33

12

FRACTIONS AND DECIMALS

Some important fractions and decimals are below.



$\frac{5}{10}=\frac{1}{2}=0.5$ $\frac{25}{100}=\frac{1}{4}=0.25$ $\frac{75}{100}=\frac{3}{4}=0.75$

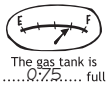
Rewrite these fractions and mixed numbers as decimals.

$\frac{1}{2}=0.5$ $\frac{1}{4}=0.25$ $\frac{3}{4}=0.75$

$1\frac{1}{2}=1.5$ $2\frac{1}{4}=2.25$ $5\frac{3}{4}=5.75$

$9\frac{1}{2}=9.5$ $18\frac{1}{4}=18.25$ $7\frac{3}{4}=7.75$

$10\frac{1}{2}=10.5$ $20\frac{1}{4}=20.25$ $37\frac{3}{4}=37.75$



The gas tank is
.....0.75..... full
0.25 0.5 0.75

The pineapple's weight is
.....2.5..... kg
2.5 2.75 2.25

13

FRACTIONS & DECIMALS

$\frac{1}{3}$ of 36 ⇒ 36 ÷ 3 = 12 ∴ $\frac{2}{3}$ of 36 = 24

$\frac{1}{4}$ of 48 ⇒ 48 ÷ 4 = 12 ∴ $\frac{3}{4}$ of 48 = 36

$\frac{1}{5}$ of 60 ⇒ 60 ÷ 5 = 12 ∴ $\frac{4}{5}$ of 60 = 48

$\frac{1}{6}$ of 24 ⇒ 24 ÷ 6 = 4 ∴ $\frac{5}{6}$ of 24 = 20

Write the decimal equivalents of these fractions.

$\frac{1}{2}$ = 0·5 $\frac{1}{4}$ = 0·25 $\frac{3}{4}$ = 0·75

$\frac{1}{5}$ = 0·2 $\frac{2}{5}$ = 0·4 $\frac{3}{5}$ = 0·6 $\frac{4}{5}$ = 0·8

$\frac{1}{10}$ = 0·1

$\frac{3}{10}$ = 0·3

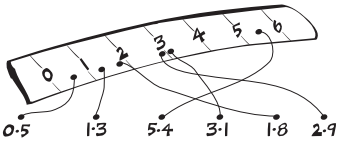
$\frac{7}{10}$ = 0·7

$\frac{9}{10}$ = 0·9

14

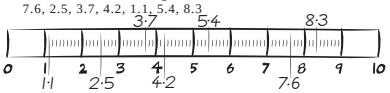
FRACTIONS & DECIMALS

Draw a line between the decimals and the correct place on the ruler.



Show where these numbers go on the number line:

7.6, 2.5, 3.7, 4.2, 1.1, 5.4, 8.3



$\frac{1}{2}$ of 24 = 12 $\frac{1}{3}$ of 72 = 24

$\frac{1}{2}$ of 240 = 120 $\frac{1}{3}$ of 720 = 240

$\frac{3}{4}$ of 80 = 60 $\frac{1}{5}$ of 65 = 13

$\frac{3}{4}$ of 800 = 600 $\frac{1}{5}$ of 650 = 130

$\frac{1}{4}$ of 52 = 13 $\frac{2}{3}$ of 54 = 36

$\frac{1}{4}$ of 520 = 130 $\frac{2}{3}$ of 540 = 360

15

There are ...36... apples altogether.

How many apples are in:

$\frac{1}{2}$ = 18

$\frac{1}{3}$ = 12

$\frac{1}{4}$ = 9

$\frac{1}{6}$ = 6

$\frac{1}{9}$ = 4

$\frac{1}{12}$ = 3

$\frac{2}{3}$ = 24

$\frac{3}{4}$ = 27

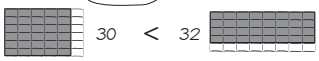
$\frac{5}{6}$ = 30

$\frac{5}{9}$ = 20

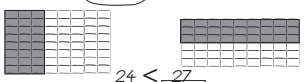
$\frac{7}{12}$ = 21

Which is bigger?

$\frac{5}{6}$ of 36 or $\frac{4}{5}$ of 40



$\frac{3}{8}$ of 64 or $\frac{3}{6}$ of 54



16

Brad has an orchard which has 80 fruit trees.
Two eighths of the trees are apple trees, one quarter of them are nectarine trees, four sixteenths of them are pear trees and the rest are plum trees.

How many of each tree does Brad have?

Apple: 20 Nectarine: 20 Pear Trees: 20 Plum Trees: 20

Tom and Kate collect apples from Brad's orchard. On the way home Tom eats one third of the apples. If Tom ate 4 apples, how many were picked?

Tom and Kate picked 12 apples

David and Victoria purchase an aquarium for there new home. One sixth of the fish in the aquarium are Black Tails. Two sixths of the fish in the aquarium are Blue Fins. The rest of the fish are Goldfish. David counts 3 black tails. Therefore there are:

$\frac{1}{6}$ = 3 black tails ..6.. Blue Fins

This means a total of 18 fish. ..9.. Goldfish

Maddox took 5 oranges and cut them into quarters.
How many quarters are there?

5 × 4 quarters = 20 quarters

Suri's fruit punch contains one and three quarter litres of apple juice, two eights of a litre of lime juice and four and a quarter litres of orange juice. In one particularly hot day, Suri drinks 3 litres of the fruit punch. She then adds four and a quarter litres of mango juice. How many litres of fruit punch does she now have?

Remember $\frac{2}{8} = \frac{1}{4}$ $1\frac{3}{4} + \frac{1}{4} + 4\frac{1}{4} = 6\frac{1}{4}$

$6\frac{1}{4} - 3 + 4\frac{1}{4} = 7\frac{1}{2}$ Total = $7\frac{1}{2}$ Litres

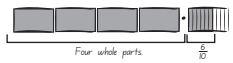
17

DECIMALS

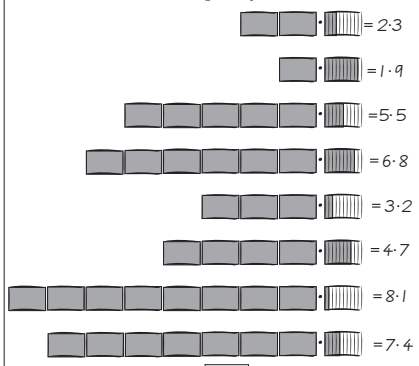
A decimal number contains a decimal point.

4·6 This is read as four point six.

The whole part, four. The fractional part, six tenths.



Write the numbers that each diagram represents.



18

DECIMALS & MIXED NUMBERS

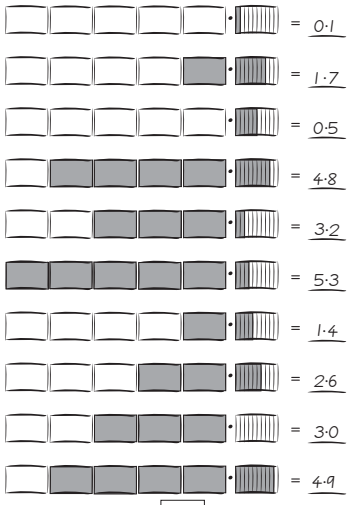
A decimal number can also be written as a mixed number (a number with a fraction) or expressed in words.

Decimal Number	Mixed Number	Description
3·2	$3\frac{2}{10}$	Three and two tenths
4·6	$4\frac{6}{10}$	Four and six tenths
5·1	$5\frac{1}{10}$	Five and one tenth
7·5	$7\frac{5}{10}$	Seven and five tenths
9·0	9	Nine
6·8	$6\frac{8}{10}$	Six and eight tenths
2·4	$2\frac{4}{10}$	Two and four tenths
8·9	$8\frac{9}{10}$	Eight and nine tenths
1·3	$1\frac{3}{10}$	One and three tenths
10·7	$10\frac{7}{10}$	Ten and seven tenths

19

DECIMALS

Give the number that is represented by each of the diagrams.



20

DECIMALS

Write the numbers into the place value chart.

	Hundreds	Tens	Ones	Tenths
three and seven tenths			3 •	7
eighteen and two tenths		1	8 •	2
twenty four and one tenths		2	4 •	1
fifty six and three tenths		5	6 •	3
forty seven and nine tenths		4	7 •	9
one hundred and twelve and four tenths	1	1	2 •	4
eight hundred and sixty five and eight tenths	8	6	5 •	8
three hundred and six tenths	3	0	0 •	6
seven hundred and ninety and seven tenths	7	9	0 •	7

Write these numbers in decimal form.

$8 + \frac{2}{10}$ = 8·2

$5 + \frac{1}{10}$ = 5·1

$10 + 6 + \frac{8}{10}$ = 16·8

$30 + 7 + \frac{1}{10}$ = 37·1

$4 + \frac{7}{10}$ = 4·7

$50 + 9 + \frac{6}{10}$ = 59·6

$20 + \frac{3}{10}$ = 20·3

$46 + \frac{7}{10}$ = 46·7

21

DECIMAL & EXPANDED FORM

Write each number in expanded form.

436·2 = 400 + 30 + 2 + $\frac{2}{10}$

52·8 = 50 + 2 + $\frac{8}{10}$

64·5 = 60 + 4 + $\frac{5}{10}$

71·9 = 70 + 1 + $\frac{9}{10}$

85·2 = 80 + 5 + $\frac{2}{10}$

313·6 = 300 + 10 + 3 + $\frac{6}{10}$

920·3 = 900 + 20 + $\frac{3}{10}$

207·4 = 200 + 7 + $\frac{4}{10}$

536·7 = 500 + 30 + 6 + $\frac{7}{10}$

Rewrite these into decimal form.

80 + 5 + $\frac{1}{10}$ = 85·1

500 + 90 + 7 + $\frac{2}{10}$ = 597·2

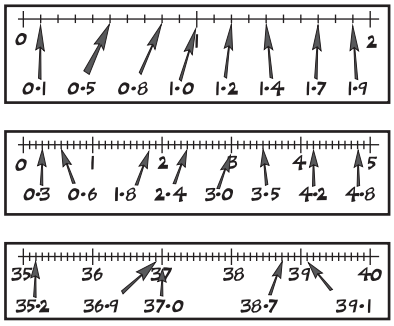
600 + 40 + $\frac{7}{10}$ = 640·7

100 + 8 + $\frac{5}{10}$ = 108·5

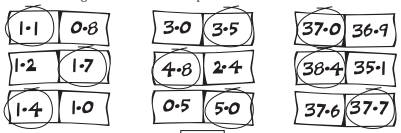
22

DECIMALS

Draw a line to show where each number is on the number line.

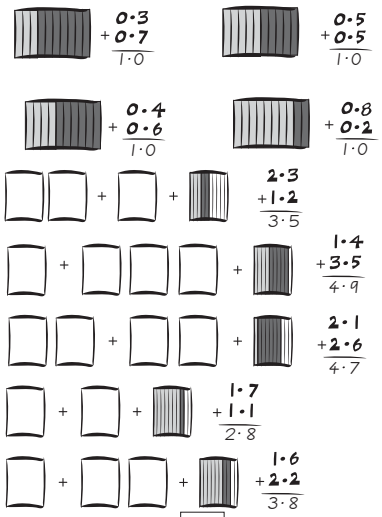


Below are some pairs of numbers.
Circle the larger number in each pair.



23

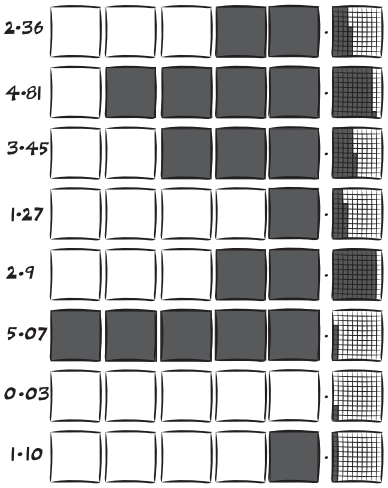
ADDING TENTHS



24

HUNDRETHS

When a tenth is divided 10 times each block represents a hundredth.
Shade the diagrams to represent the given number.



25

HUNDREDTHS

The first two fractions (below) are equal. They do not equal the last.

$\frac{30}{100} = 0.3$ $\frac{3}{10} = 0.3$ $\frac{3}{100} = 0.03$

Write each of these as: 1. Decimal numbers.
2. Expanded form.
3. Mixed numbers.

Decimal = 1·52

Expanded form = $1 + \frac{5}{10} + \frac{2}{100}$

Mixed number = $1\frac{52}{100}$

Decimal: 3·48

Expanded form: $3 + \frac{4}{10} + \frac{8}{100}$

Mixed number: $3\frac{48}{100}$

26

Decimal: 2·36

Expanded form: $2 + \frac{3}{10} + \frac{6}{100}$

Mixed number: $2\frac{36}{100}$

Decimal: 0·71

Expanded form: $\frac{7}{10} + \frac{1}{100}$

Mixed number: $\frac{71}{100}$

Decimal: 1·09

Expanded form: $1 + \frac{9}{100}$

Mixed number: $1\frac{9}{100}$

Decimal: 3·63

Expanded form: $3 + \frac{6}{10} + \frac{3}{100}$

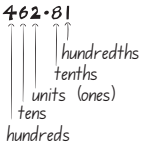
Mixed number: $3\frac{63}{100}$

27

DECIMALS

Decimals come between whole numbers.

Each digit to the right becomes ten times smaller. This also means that each digit to the left becomes ten times bigger.



The **6** in **14·67** is: six tenths

The **8** in **8·32** is: Eight units (ones)

The **5** in **29·45** is: Five hundredths

The **1** in **156·28** is: One hundred

The **9** in **30·89** is: Nine hundredths

The **0** in **5·06** is: Zero (no) tenths

The **2** in **72·90** is: Two units (ones)

28

Complete these sums.

6·2 × 10 = 62

12·3 ÷ 10 = 1·23 5·1 × 100 = 510·0

0·48 × 100 = 48·0 101·0 ÷ 100 = 1·01

91·2 ÷ 10 = 9·12 215·0 ÷ 100 = 2·15

Complete the sums.

$\frac{1}{2} + \boxed{\frac{1}{2}} = 1$

$\frac{1}{3} + \boxed{\frac{2}{3}} = 1$

$\frac{3}{4} + \boxed{1\frac{1}{4}} = 2$

$\frac{4}{5} + \boxed{1\frac{1}{5}} = 2$

$1 - \frac{2}{2} = \boxed{0}$

$1 - \frac{2}{3} = \boxed{\frac{1}{3}}$ $2 - \frac{1}{4} = \boxed{1\frac{3}{4}}$ $3 - \frac{3}{5} = \boxed{2\frac{2}{5}}$

Complete the table.

Fraction	Decimal
$\frac{23}{100}$	0·23
$\frac{19}{100}$	0·19
$\frac{8}{10}$	0·8
$\frac{7}{100}$	0·07
$3\frac{1}{10}$	3·1
$2\frac{3}{10}$	2·3

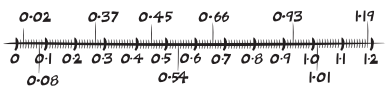
29

DECIMALS

Write these numbers onto the place value chart.

	Tens	Units	•	Tenths	Hundredths
Five and twenty three hundredths		5	·	2	3
Twenty four and sixteen hundredths	2	4	·	1	6
Thirty six and twelve hundredths	3	6	·	1	2
Eighteen and fifty one hundredths	1	8	·	5	1
Ninety nine and ten hundredths	9	9	·	1	0
Eighty two and four hundredths	8	2	·	0	4

Locate each of the numbers on the number line.



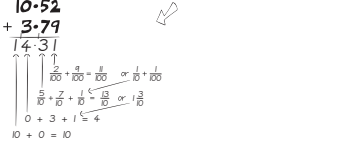
All the numbers above should be located on the number line.
Use less than (<) or greater than (>) to make these statements true.

0·08 < 0·14	1·01 > 0·02
0·37 < 0·45	0·14 < 0·66
1·19 > 0·93	0·02 < 1·19
0·66 > 0·37	0·93 > 0·08

30

ADDING DECIMALS

10·52 + 3·79 ☞ Write the numbers underneath each other so that the decimal points line up.



Now add these.

22·07 15·38 37·45	9·45 42·32 51·77	21·68 12·15 33·83
33·56 21·59 55·15	17·44 19·83 37·27	25·77 32·47 58·24
86·48 17·75 104·23	72·39 36·83 109·22	57·65 15·88 73·53

31

DECIMAL ADDITION

Rewrite these numbers in columns with the decimal points in line. Then complete the additions.

0·05 + 0·09	0·27 + 4·0
0·05 + 0·09 0·14	0·27 + 4·00 4·27
1·8 + 3·46	7·25 + 1·85
1·80 + 3·46 5·26	7·25 + 1·85 9·10
0·54 + 2·53	1·65 + 0·08
0·54 + 2·53 3·07	1·65 + 0·08 1·73
0·68 + 0·9	11·63 + 9·82
0·68 + 0·90 1·58	11·63 + 9·82 21·45
2·76 + 1·37	5·99 + 1·09
2·76 + 1·37 4·13	5·99 + 1·09 7·08

32

DECIMAL SUBTRACTION

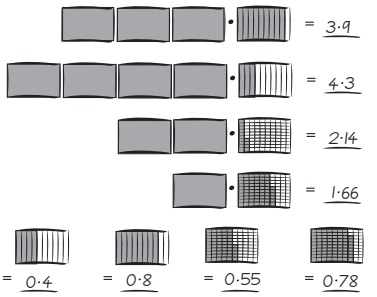
Rewrite these numbers in columns with the decimal points in line. Then complete the subtraction.

0·05 − 0·02	0·43 − 0·20
0·05 − 0·02 0·03	0·43 − 0·20 0·23
1·2 − 0·8	1·35 − 0·65
1·2 − 0·8 0·4	1·35 − 0·65 0·70
0·7 − 0·45	1·7 − 0·95
0·70 − 0·45 0·25	1·70 − 0·95 0·75
10·0 − 0·14	6·42 − 5·01
10·00 − 0·14 9·86	6·42 − 5·01 1·41
10·68 − 8·89	8·0 − 5·13
10·68 − 8·89 1·79	8·00 − 5·13 2·87

33

DECIMAL TEST

Write the number that is represented by the shading.



= 3·9 = 4·3 = 2·14 = 1·66

= 0·4 = 0·8 = 0·55 = 0·78

Complete the table.

Decimal Number	Mixed Number	Description
5·4	$5\frac{4}{10}$	Five and four tenths
3·6	$3\frac{6}{10}$	Three and six tenths
100·28	$100\frac{28}{100}$	One hundred and twenty eight hundreths
35·16	$35\frac{16}{100}$	Thirty five and sixteen hundreths

34

Write the value of the 5 in each of these numbers.

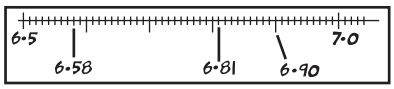
16·51 → Five tenths

50·62 → Fifty

0·35 → Five hundreths

25·48 → Five (ones)

Locate each number on the number line.



Use a greater than (>), equals (=) or less then (<) to make each a true statement.

0·9 < 1·0 0·36 < 0·52 1·27 > 0·95

4·2 > 3·8 6 = 6·0 10 > 0·30

Add

6·2 + 3·6 = 9·8 15·1 + 3·5 = 18·6

8·3 + 5·4 = 13·7 1·3 + 9·7 = 11·0

9·1 + 3·4 = 12·5 11·1 + 0·9 = 12·0

35

Add

5·41 + 3·99 = 9·40

6·85 + 17·78 = 24·63

8·37 + 16·85 = 25·22

Rewrite these mixed numbers as decimal numbers.

$3\frac{1}{4}$ = 3·25 $18\frac{1}{2}$ = 18·5 $35\frac{3}{4}$ = 35·75

Rewrite these decimal numbers as mixed numbers.

20·8 = $20\frac{8}{10}$ 36·24 = $36\frac{24}{100}$ 10·03 = $10\frac{3}{100}$ 15·25 = $15\frac{25}{100}$ or $15\frac{1}{4}$

Subtract

5·7 − 3·2 = 2·5

27·50 − 6·75 = 20·75

15·54 − 7 = 8·54

9 − 3·45 = 5·55

Hair Doctor Terrence charges $154.95 for a style, colour and haircut. Josette pays with two $100 notes. How much change should she get?

$200 − $154·95 = $45·05

Add up all the correct answers from the last 3 pages. Put your score in the box.

45 and above: A+ student
40 and above: A student

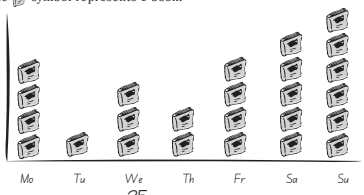
50

Always strive to be an A+ student. Find out where you went wrong. If needed rub out your answers and try the test again another day.

36

GRAPHS

The graph shows the number of books that Katie read last week. The 📖 symbol represents 1 book.



Altogether Katie read ...25... books.

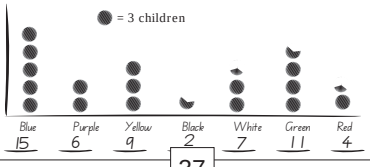
Katie read the least number of books on ...Tuesday...

Katie read the most books on ...Sunday...

Katie read a total of 11 books on ...Saturday... & ...Sunday...

Katie read ....1..... more books on Saturday than on Friday.

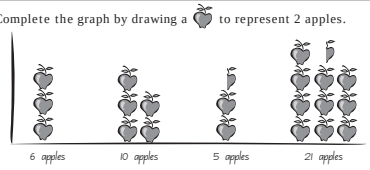
Katie did a survey on children's favourite colours. Below are her survey results. Write underneath how many chose each colour.



Blue	Purple	Yellow	Black	White	Green	Red
15	6	9	2	7	11	4

37

Complete the graph by drawing a 🍎 to represent 2 apples.



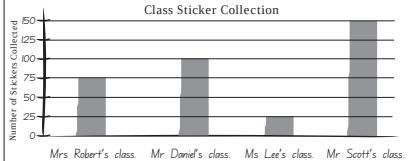
If an apple costs $0.50 then six apples cost $ 3

If an apple costs $0.50 then 21 apples cost $ 10·50

Give the total cost of apples in the graph.

$3 (6 apples) + $5 (10 apples) + $2·50 (5 apples) + $10·50 (21 apples) = $21

Class Sticker Collection



Which class has collected the most stickers? Mr Scott

Which teacher does not give out many stickers? Ms Lee

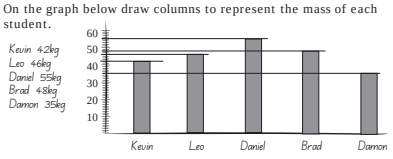
Mr Daniel's class has 25 more stickers than Mrs Roberts class.

Altogether there were 350 stickers collected.

38

On the graph below draw columns to represent the mass of each student.

Kevin 42kg
Leo 46kg
Daniel 55kg
Brad 48kg
Damon 35kg



The heaviest student is: Daniel

The lightest student is: Damon

Brad is 2 kg heaver than Leo.

If all 5 boys were put on the scales then their total mass would be:

42 + 46 + 55 + 48 + 35 = 226

A supermarket has made a pictogram of how many pies they sell in the first five months of the year. Each picture pie means 100 real pies. Fill in the numbers and pies.

Jan	● ● ●	300
Feb	● ● ● ●	400
Mar	● ● ● ◗	350
Apr	● ● ● ● ◔	425
May	● ● ◔	275

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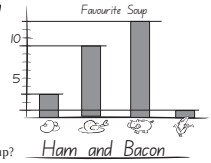
HANDLING DATA

When counting items use a tally chart with 1 dash recording each item. The frequency column adds up all the tally marks.

Complete the frequency column then complete the graph.

Favourite Soup	Tally	Frequency
Tomato	III	3
Chicken	𝍸 IIII	9
Ham and Bacon	𝍸 𝍸 II	12
Creamed Corn	I	1



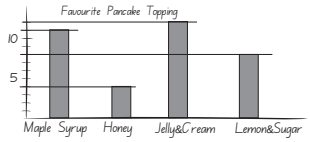
What was the most favoured soup? Ham and Bacon

How many of the people surveyed chose Ham and Bacon? 12

How many were surveyed? 25 people

Complete the frequency column then complete the graph below.

Favourite Pancake Toppings	Tally	Frequency
Maple Syrup	𝍸 I	11
Honey	III	4
Jelly and Whipped Cream	𝍸 𝍸 II	12
Lemon and Sugar	𝍸 III	8



40

We asked some students their favourite sport. The results are below.

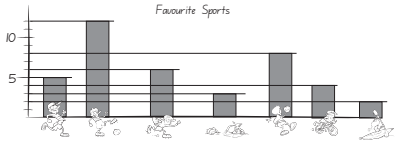
Complete the frequency column then complete the graph.

Sport	Tally	Frequency
Athletics	𝍸	5
Football	𝍸 𝍸 ||	12
Rugby	𝍸 |	6
Swimming	|||	3
Netball	𝍸 |||	8
Cycling	|||	4
Kayaking	|\	2

How many students were surveyed? 40

The most popular sport was Football

How many students said netball as their favourite? 8



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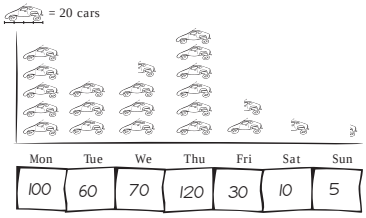
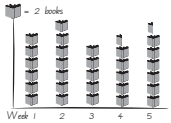
REPRESENTING DATA

Each morning Amanda and Wayne take a note of the number of cars parked in a public car park. Write the number of cars parked each day.

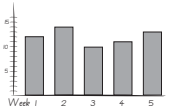


Here are the number of books taken out of the library by Brad. Complete all the charts.

	Tally	Frequency
Week 1	𝍸 𝍸 ||	12
Week 2	𝍸 𝍸 ||||	14
Week 3	𝍸 𝍸	10
Week 4	𝍸 𝍸 |	11
Week 5	𝍸 𝍸 |||	13



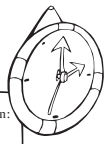
Picture graphs look nicer however they can sometimes be harder to read.



42

TIME

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours



How many seconds in:
- 1 minute 60
- 15 minutes 900
- 20 minutes 1200

How many minutes in:
- 1 hour 60
- 1.5 hours 90
- 8 hours 480

How many hours in:
- 1 day 24
- 3 days 72
- 7 days 168

How many years in 36 months? 3

How many months in 5 years? 60

How many months in 52 weeks? 12

1 year = 365 days or 366 days in a leap year.

1 year = 52 weeks.

1 year = 12 months.

1 month = (approximately) 4 weeks.

1 week = 7 days.

1 century = 100 years.

1 millennium = 1000 years.

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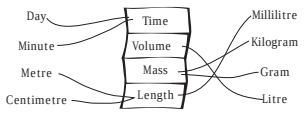
UNITS OF MEASURE

Join up the measures to the matching units.



Complete the missing numbers and units.

532 cm = 5 m 32 cm

2168 mm = 2 m 16 cm 8 mm

1319 g = 1 kg 319 g

2134 ml = 2 litres 134 ml

3 hours 45 minutes = 225 minutes

12 minutes = 720 seconds

December = 4 weeks 3 days

Remember
10mm = 1cm
100cm = 1m
1000mm = 1m
1000ml = 1 litre
1000g = 1 kg

Write in all the details.

Today's date ….(day)/ ….(month)/ ….(year)

My height ……..(cm) = ……. (m) …….(cm)

My weight …….. My age ……. (years) ……. (months)

I go to bed at …….. I get up at ……..

I sleep for ……. hours ……. minutes

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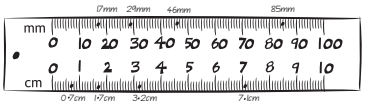


Mark on the ruler the following measurements.

3.2 cm 46 mm 0.7 cm 29 mm 7.1 cm 85 mm

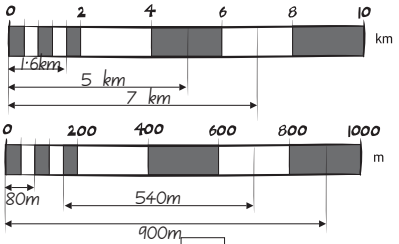
What is 1 kg in grams? 1000grams

Change 3 litres into ml. 3 litres = 3000 ml

2000 g = 2 kg 500 m = 0.5 km

8 kg = 8000 g 1000 mm = 100 cm

Write the real distances indicated on each map scale.



45

UNITS OF MEASURE

Circle all the units that measure length.
kg, (mm,) l, g, ml, (cm, m, km.)

Circle all the units that measure mass.
km, m, cm, ml, (g,) l, mm, (kg.)

Circle all the units that measure volume.
(ml,) g, m, mile, (cm, l.)

What units of measure would you use to measure:

The height of a tree. metre

The amount of juice in a glass. ml

Your mass. kilograms

The distance from home to your school. kilometres

The amount of water in a swimming pool. litres

The mass of an apple. grams

The length of a pen. millimetres

A chicken's mass. kilograms

46

Fill in the missing quantities.

1 hour = 60 minutes

$\frac{1}{4}$ hour = 15 minutes

0.5 hour = 30 minutes

$1\frac{1}{2}$ hours = 90 minutes

$3\frac{3}{4}$ hours = 225 minutes

20 minutes = 1200 seconds

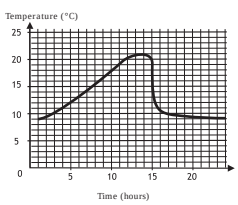
$2\frac{1}{4}$ minutes = 135 seconds

$1\frac{1}{5}$ minutes = 72 seconds

24 hours = 1 day

pm = morning / afternoon
am = morning / afternoon

The graph below shows the variation in temperature over one day. The temperature was measured each hour starting at 1am.



What was the temperature at 10am? 18°C

When was it the hottest? 2pm

During which time was the temperature rising? Between 1am – 2pm

There was a rainstorm during the day. When do you think that happened? 3pm

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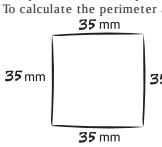
PERIMETERS

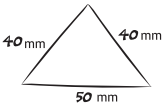
The perimeter of a shape is the total distance around the shape.
To calculate the perimeter add up all the side lengths.



Write down the lengths of all the sides.

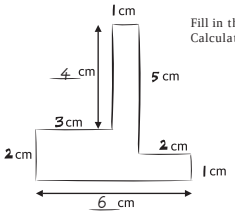
35 + 35 + 35 + 35 mm

Perimeter = 140 mm



40 + 40 + 50

Perimeter = 130 mm

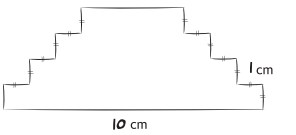


Fill in the missing measurements. Calculate the perimeter.

Perimeter = 24 cm

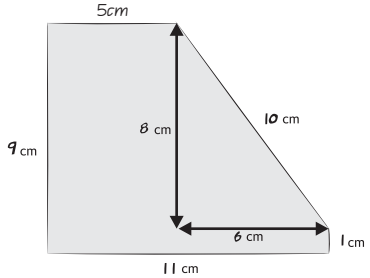
48

Fill in the missing measurements. Calculate the perimeters.



Perimeter = 28 cm

Means that these sides all have the same length.



Perimeter = 36 cm

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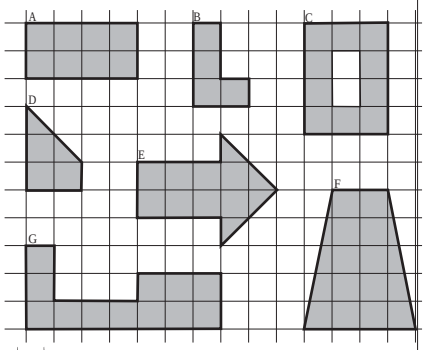
AREA

How many square centimetres make up each shape?
Count the squares and give the area of each shape.

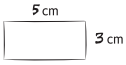


= 1 square centimetre (1 sq. cm)

Area A = 8 sq. cm
Area B = 4 sq. cm
Area C = 10 sq. cm
Area D = 4 sq. cm
Area E = 10 sq. cm
Area F = 15 sq. cm
Area G = 12 sq. cm

50

The area of a rectangle is obtained by multiplying the length by the width. Make sure both are measured with the same units.



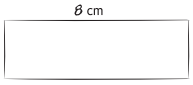
= 5 cm × 3 cm
= 15 sq. cm
or = 15 cm²

Find the areas.

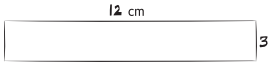
Area = L × W
= 2cm × 10cm
= 20cm²

Area = L × W
= 3cm × 3cm
= 9cm²

Area = L × W
= 6cm × 6cm
= 36cm²



Area = L × W
= 8cm × 5cm
= 40cm²



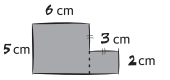
Area = L × W
= 12cm × 3cm
= 36cm²

Note: The figures on this page are not drawn to scale.

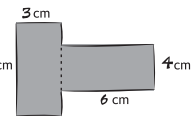
51

AREA

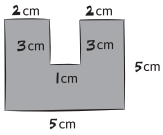
Some figures are made up of different shapes. To find the area calculate the area of each separate shape, then add (or subtract) the areas.



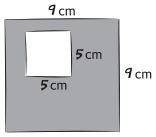
Area = L × W + L × W
= 6 × 5 + 2 × 3
= 36cm²



Area = L × W + L × W
= 8 × 3 + 6 × 4
= 48cm²



Area = 5 × 5 − 3 × 1
= 22cm²



Area = 9 × 9 − 5 × 5
= 56cm²

52

MONEY CALCULATIONS

$25·60 + $12·30 = $37·90	$14·80 + $13·10 = $27·90	$21·20 + $16·55 = $37·75
$18·25 + $15·55 = $33·80	$16·85 + $10·95 = $27·80	$24·45 + $14·55 = $39·00
$19·95 + $19·95 = $39·90	$24·85 + $25·95 = $50·80	$39·75 + $16·55 = $56·30

10c + 90c = $1
50c + 50c = $1
30c + 70c = $1
40c + 60c = $1
80c + 20c = $1
35c + 65c = $1
45c + 55c = $1
75c + 25c = $1
85c + 15c = $1
5c + 95c = $1

53

MONEY CALCULATIONS

Subtract the following.

$5 − $1·25 = $3·75	$10 − $4·55 = $5·45
$5 − $2·80 = $2·20	$10 − $3·75 = $6·25
$5 − $3·55 = $1·45	$10 − $2·95 = $7·05
$5 − $2·45 = $2·55	$10 − $1·15 = $8·85
$5 − $4·15 = $0·85	$10 − $7·35 = $2·65

Count and write each amount in numerals and in words.

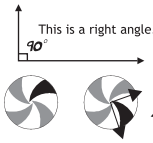
= $15·80
Fifteen dollars and eighty cents

= $46·20
Forty six dollars and twenty cents

= $122·70
One hundred and twenty two dollars and seventy cents

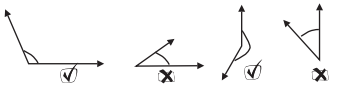
54

ANGLES

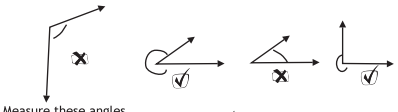


Quart Half Three Full

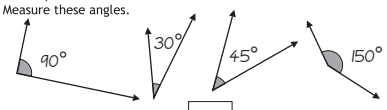
✗ or ✓ Which of these angles is bigger than 90°?



✗ or ✓ Which of these angles is bigger than 180°?



Measure these angles.

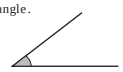


55

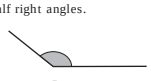
ANGLES

Write the value then draw each angle.

Half a right angle.
45°



One and a half right angles.
135°



Three right angles.
270°

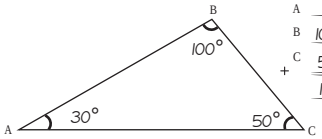
Three and a half right angles.
315°

Write down the time and angles formed on each clock.

Time	3 o'clock	1 o'clock	7 o'clock
Angle	90°	30°	210°

56

Measure the angles of the triangle then add them up.
Draw each angle in the triangle.

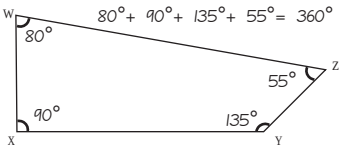


A	30°
B	100°
C	50°
+	
	180°

Measure or calculate the angles between these compass directions.

South and West	90°
North and North East	45°
East and West	180°
North and South East.	135°

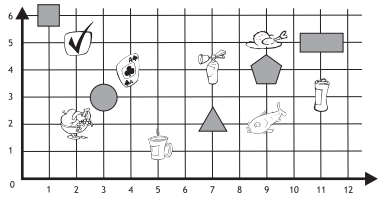
Measure the angles of the quadrilateral then add them up.



80° + 90° + 135° + 55° = 360°

57

GRID POSITIONS



When giving the position of an object give the horizontal position then the vertical position.

Give the position of the:

Fire extinguisher (7 , 4)
Coffee mug (5 , 1)
Fruit Bowl (2 , 2)
Chicken meal (9 , 5)
Battery (11 , 3)
Tick box (2 , 5)
Fish (9 , 2)
Ace of clubs (4 , 4)

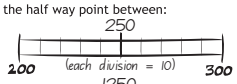
On the grid above draw a square at (1, 6), a circle at (3, 3), a triangle at (7, 2), a rectangle at (11, 5) and a pentagon at (9, 4).

58

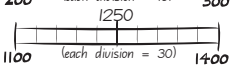
READING SCALES

Use the number lines to find the half way point between:

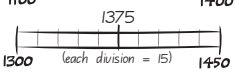
200 and 300 = 250



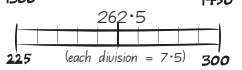
1100 and 1400 = 1250



1300 and 1450 = 1375



225 and 300 = 262·5



Find the half way point between these numbers:

500 and 700 = 600

285 and 485 = 385

840 and 960 = 900

180 and 505 = 342·5

George and Jennifer have marked their heights on the wall. What are their heights?

George = 1·6 m

Jennifer = 1·45 m

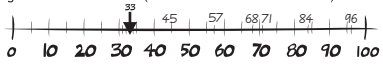
Mat is 1.75m tall. Mark this on the ruler.

59

ROUNDING

When rounding look at the last digit.
1, 2, 3, and 4 get rounded down; 5, 6, 7, 8 and 9 get rounded up.

Indicate these numbers on the number line.
Round each to the nearest 10.
e.g 33 to nearest 10 = 30 (it is closer to 30 than it is to 40)



45 to nearest 10 = 50

57 to nearest 10 = 60

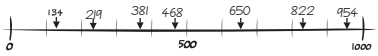
68 to nearest 10 = 70

71 to nearest 10 = 70

84 to nearest 10 = 80

96 to nearest 10 = 100

Indicate these numbers on the number line.
Round each to the nearest 100. e.g 134 to nearest 100 = 100



219 to nearest 100 = 200

381 to nearest 100 = 400

468 to nearest 100 = 500

650 to nearest 100 = 700

822 to nearest 100 = 800

954 to nearest 100 = 1000

60

Round these numbers to make the sums easier.
Then compare the approximate answer with the actual answer.

509 + 492 ⇒ 500 + 500 = 1000
Actual answer = 1001

23 + 47 ⇒ 20 + 50 = 70
Actual answer = 70

65 + 32 ⇒ 70 + 30 = 100
Actual answer = 97

18 + 44 ⇒ 20 + 40 = 60
Actual answer = 62

52 + 69 ⇒ 50 + 70 = 120
Actual answer = 121

410 + 23 ⇒ 410 + 20 = 430
Actual answer = 433

625 + 44 ⇒ 630 + 40 = 670
Actual answer = 669

567 + 59 ⇒ 570 + 60 = 630
Actual answer = 626

508 + 299 ⇒ 510 + 300 = 810
Actual answer = 807

460 + 320 ⇒ 500 + 300 = 800
Actual answer = 780

250 + 140 ⇒ 300 + 100 = 400
Actual answer = 390

61

UNDERSTANDING × AND ÷

Complete each of the following:

15 + 15 + 15 + 15 + 15 + 15 = 6 × 15
= 90

22 + 22+22+22 = 4 × 22
= 88

18 + 18 + 18 + 18 + 18 + 18 + 18 + 18 = 8 × 18
= 144

12 + 12 + 12 + 12 + 12 = 5 × 12
= 60

120 − 30 − 30 − 30 − 30 = 0
∴ 120 ÷ 30 = 4

44 − 11 − 11 − 11 − 11 = 0
∴ 44 ÷ 11 = 4

72 − 36 − 36 = 0
∴ 72 ÷ 36 = 2

81 − 27 − 27 − 27 = 0
∴ 81 ÷ 27 = 3

62

MULTIPLICATION STRATEGIES

To make multiplication easier, split the numbers into units, tens and hundreds, multiply each part then add the products.

59 × 3
9 × 3 = 27
50 × 3 = 150
177

67 × 5
7 × 5 = 35
60 × 5 = 300
335

23 × 6
3 × 6 = 18
20 × 6 = 120
138

71 × 7
1 × 7 = 7
70 × 7 = 490
497

98 × 2
8 × 2 = 16
90 × 2 = 180
196

27 × 4
7 × 4 = 28
20 × 4 = 80
108

245 × 9
5 × 9 = 45
40 × 9 = 360
200 × 9 = 1800
2205

548 × 6
8 × 6 = 48
40 × 6 = 240
500 × 6 = 3000
3288

398 × 7
8 × 7 = 56
90 × 7 = 630
300 × 7 = 2100
2786

847 × 8
7 × 8 = 56
40 × 8 = 320
800 × 8 = 6400
6776

249 × 5
9 × 5 = 45
40 × 5 = 200
200 × 5 = 1000
1245

893 × 4
3 × 4 = 12
90 × 4 = 360
800 × 4 = 3200
3572

63

PEASANT MULTIPLICATION

The following is called the Russian Peasant Method of Multiplication
e.g. 15 × 26

STEP 1 Put the numbers in two columns. Double each consecutive number in column 1. Halve each consecutive number in Column 2 (omit remainders).

STEP 2 Add all the numbers in column 1 which are opposite odd numbers in column 2.

STEP 1

Column 1	Column 2
15	26
30	13
60	6
120	3
240	1

STEP 2
30
+ 120
+ 240
390

THE ANSWER
15 × 26 = 390

Use the Russian Peasant Method of Multiplication to multiply:

33 × 18

33	18
66	9
132	4
264	2
528	1

66
+ 528
594

10 × 25

10	25
20	12
40	6
80	3
160	1

10
80
+ 160
250

20 × 41

20	41
40	20
80	10
160	5
320	2
640	1

20
160
+ 640
820

64

Use the Russian Peasant Method of Multiplication to multiply:

13 × 19

13	19
26	9
52	4
104	2
208	1

13
26
+ 208
247

20 × 25

20	25
40	12
80	6
160	3
320	1

20
160
+ 320
500

10 × 30

10	30
20	15
40	7
80	3
160	1

20
40
80
+ 160
300

25 × 6

25	6
50	3
100	1

100
+ 50
150

12 × 15

12	15
24	7
48	3
96	1

12
24
48
+ 96
180

30 × 50

30	50
60	25
120	12
240	6
480	3
960	1

60
480
+ 960
1500

65

MULTIPLICATION

When multiplying by a single digit number:
1. Multiply the number by each digit of the larger number.
2. Each time you get an answer of 10 or more carry the left hand digits to the next column (similar to addition).

28 × 7
56
7 × 8 = 56

28 × 7
196
7 × 20 = 140
140 + 50 = 190

Multiply these without using a calculator.

63 × 4 = 252	47 × 3 = 141	25 × 6 = 150	33 × 5 = 165
52 × 8 = 416	64 × 7 = 448	86 × 9 = 774	78 × 2 = 156
39 × 7 = 273	37 × 6 = 222	98 × 3 = 294	85 × 5 = 425
58 × 4 = 232	96 × 8 = 768	56 × 2 = 112	24 × 9 = 216

66

136 × 3
8
3 × 6 = 18

136 × 3
08
3 × 30 = 90
90 + 10 = 100

136 × 3
408
3 × 100 = 300
300 + 100 = 400

Multiply these without using a calculator.

412 × 5 = 2060	235 × 7 = 1645	156 × 3 = 468	175 × 4 = 700
325 × 6 = 1950	179 × 5 = 895	423 × 4 = 1692	216 × 7 = 1512
524 × 6 = 3144	453 × 8 = 3624	325 × 9 = 2925	475 × 7 = 3325
282 × 9 = 2538	143 × 8 = 1144	234 × 5 = 1170	243 × 7 = 1701

When multiplying by a two digit number start the second line with a zero (because you are multiplying by 10s).

97 × 32
14
2 × 7 = 14

97 × 32
194
2 × 90 = 180
180+10=190

97 × 32
194
10
30 × 7 = 210

97 × 32
194
2910
30 × 90 = 2700
2700 + 200 = 2900

97 × 32
194
2910
3104

67

MORE MULTIPLICATION

Multiply these without using a calculator.

47 × 23 = 1081	71 × 32 = 2272	54 × 16 = 864	58 × 21 = 1218
63 × 26 = 1638	46 × 37 = 1702	32 × 25 = 800	24 × 18 = 432
243 × 27 = 6561	251 × 16 = 4016	278 × 32 = 8896	362 × 22 = 7964
269 × 29 = 7801	407 × 18 = 7326	135 × 25 = 3375	383 × 34 = 13022

68

DIVISION

$6\overline{)283}$ $-24\downarrow$ 4 — $6 \times 4 = 24$, $28 - 24 = 4$

$6\overline{)283}$ $-24\downarrow$ 43 -42 1 — $6 \times 7 = 42$, $43 - 42 = 1$ remainder

$6\overline{)283}$ $-24\downarrow$ 43 -42 1 $= 47\frac{1}{6}$

Use the method above to do these division sums.

$5\overline{)358} = 71\frac{3}{5}$ (−35, 8, −5, 3)

$8\overline{)193} = 24\frac{1}{8}$ (−16, 33, −32, 1)

$9\overline{)470} = 52\frac{2}{9}$ (−45, 20, −18, 2)

$6\overline{)535} = 89\frac{1}{6}$ (−48, 55, −54, 1)

$3\overline{)144} = 48$ (−12, 24, −24, 0)

$7\overline{)531} = 75\frac{6}{7}$ (−49, 41, −35, 6)

$4\overline{)729} = 182\frac{1}{4}$ (−4, 32, −32, 09, −8, 1)

$2\overline{)526} = 263$ (−4, 12, −12, 06, −6, 0)

$5\overline{)248} = 49\frac{3}{5}$ (−20, 48, −45, 3)

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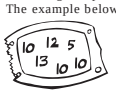
AVERAGES

An average helps to summarise data. One type of average is the mean. The example below shows how to find the mean of a set of numbers:



1. Find the total.
   $10 + 13 + 12 + 5 + 10 + 10 = 60$
2. Divide the total by the number of values.
   $60 \div 6 = 10$ Mean = 10

Find the mean of each set of numbers:

3 10 5 — $(3 + 10 + 5) \div 3 = 6$

15 7 9 5 3 15 — $(15 + 7 + 9 + 5 + 3 + 15) \div 6 = 9$

3 7 5 13 — $(3 + 7 + 5 + 13) \div 4 = 7$

20 7 9 12 7 — $(20 + 7 + 9 + 12 + 7) \div 5 = 11$

10 17 13 8 — $(10 + 17 + 13 + 8) \div 4 = 12$

1 1 1 3 8 8 4 6 — $(1 + 1 + 1 + 3 + 8 + 8 + 4 + 6) \div 8 = 4$

16 32 45 27 10 50 — $(16 + 32 + 45 + 27 + 10 + 50) \div 6 = 30$

22 25 30 23 — $(22 + 25 + 30 + 23) \div 4 = 25$

86 83 92 — $(86 + 83 + 92) \div 3 = 87$

12 16 15 14 10 11 6 — $(12 + 16 + 15 + 14 + 10 + 11 + 6) \div 7 = 12$

70

Using the Diabolic Magic Square add up:

The numbers in any diagonal.	Sum = 34
The numbers in any broken diagonal.	Sum = 34
The numbers in any column.	Sum = 34
The numbers in any row.	Sum = 34
Any group of four cells that form a square	Sum = 34

What do all the sums have in common?

All the sums are the same. They equal 34.

Here is the template to make a magic cube. Copy the template onto a big piece of cardboard and make the cube.

20	4	18
16	21	5
6	17	19

20	16	6	6	17	19	19	5	18	18	4	20
13	3	26	26	1	15	15	25	2	2	27	13
9	23	10	10	24	8	8	12	22	22	11	9

10	24	8
23	7	12
9	11	22

Each row and column adds up to: 42

There is one number which you cannot see because it is hidden in the middle of the cube.

What is this number? 14

72

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