

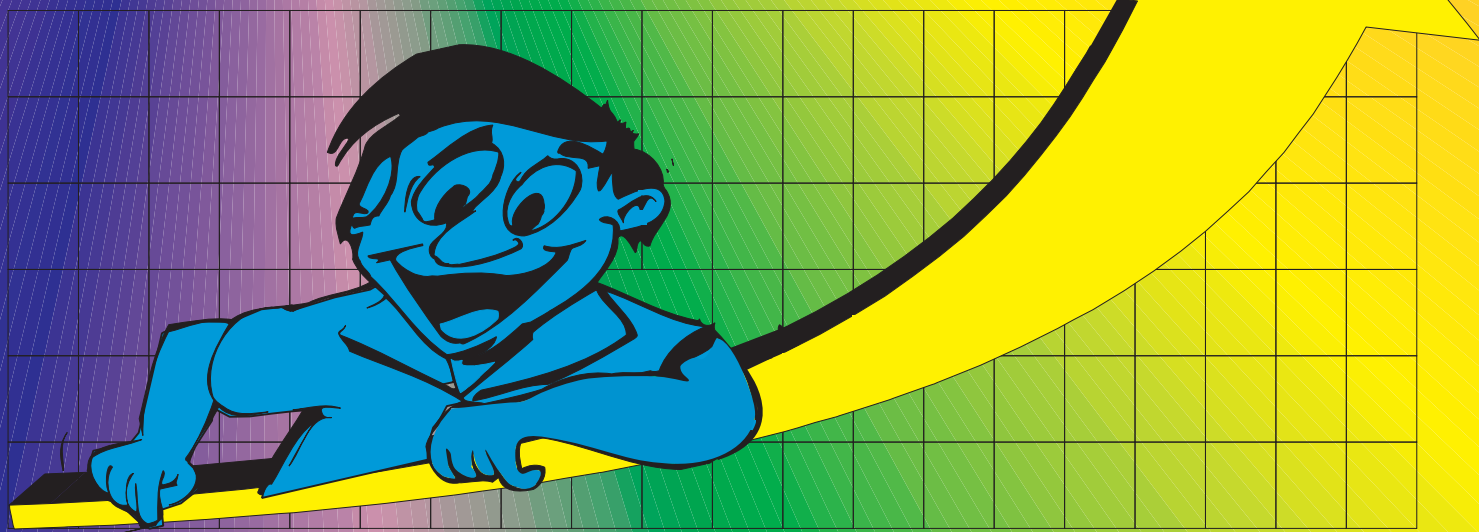
Mighty MATHS

for NZ 9-12 year olds

book **3**

Stepping Up to Harder Numbers

Working with Fractions, Percentages,
Decimals, Squares & Square Roots



Kim Freeman

Published by Mahobe Resources (NZ) Ltd

What is Mighty Math?

Mighty Math is a series of workbooks designed to support the Math Curriculum. Each book is a culmination of many years teaching experience by the author. By using these books, students can practise and discover the mathematical concepts and principles that are essential for success in school mathematics. The pages provide 9 - 12 year old students with both reinforcement and extension to their normal school mathematics lessons. This allows them to maintain the skills that they already have and helps to overcome any weaknesses. The pages can also complement school lessons, helping the student to develop faster in mathematics, and give them a "head start" in class.

There are 8 books in the series for 9-12 year olds. All can be downloaded for FREE.

The series covers all the strands and relevant age group levels of Mathematics in the New Zealand Curriculum: Number, Measurement, Geometry, Algebra, and Statistics. Within these strands, students will get practice at: calculating, estimating and using measuring equipment. We are sure that the work will fit into any mathematics curriculum.



If you use the sheets often, or if you just find Mighty Math really useful then you might consider a \$2 donation. Send your money through PayPal: admin@mahobe.co.nz

MIGHTY MATHS for 9 - 12 year olds

Book 3: Stepping Up to Harder Numbers

(Working with Fractions, Percentages, Decimals, Squares and Square Roots)

Kim Freeman

This edition is Part 3 of an 8 Part eBook series.

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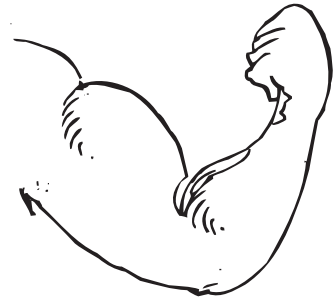
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THE MIGHTY MATHS BLACKBELT

ADDITION 1



Add 3 to each number **+3**

3	5	8	1	9	4	10	2	15	7

Add 8 to each number **+8**

1	5	6	9	2	0	8	3	13	4

Add 4 to each number **+4**

3	1	5	9	12	7	0	4	6	2

Add 6 to each number **+6**

6	2	0	9	1	14	5	3	7	4

Add 9 to each number **+9**

6	7	1	3	9	20	2	5	0	4

Add 7 to each number **+7**

14	19	17	15	12	10	9	13	16	23

Add 12 to each number **+12**

12	9	8	11	14	3	7	10	6	0

Add 3 to each number **+3**

15	19	18	11	9	4	10	2	15	17

Add 5 to each number **+5**

22	10	17	15	19	14	11	13	18	0

Add 8 to each number **+8**

11	15	16	19	12	0	18	13	14	32

Add 4 to each number **+4**

13	11	15	19	22	17	10	14	16	12

Subtract 2 from each number **-2**

16	12	10	19	11	24	15	13	17	14

Subtract 5 from each number **-5**

16	17	11	13	19	22	12	15	10	14

Subtract 3 from each number **-3**

3	5	8	10	9	4	10	12	15	7

Subtract 6 from each number **-6**

12	10	9	6	7	14	11	23	13	20

Subtract 4 from each number **-4**

11	5	6	9	12	10	8	15	13	4

Subtract 7 from each number **-7**

13	11	15	9	12	7	10	14	16	8

Subtract 6 from each number **-6**

6	12	10	19	11	14	15	13	7	8

Subtract 9 from each number **-9**

16	17	11	13	9	20	12	15	10	14

Subtract 7 from each number **-7**

14	19	17	15	12	10	9	13	16	23

Subtract 12 from each number **-12**

12	19	18	13	14	23	17	20	16	15

Subtract 3 from each number **-3**

15	19	18	11	9	4	10	12	15	17

Subtract 5 from each number **-5**

22	10	17	15	17	14	11	13	18	10

Multiply each number by 4 $\times 4$

1	5	6	9	2	0	8	3	4	7

Multiply each number by 6 $\times 6$

3	1	5	9	2	7	10	4	6	8

Multiply each number by 3 $\times 3$

6	2	0	9	1	4	5	3	7	12

Multiply each number by 5 $\times 5$

6	7	1	3	9	2	8	5	0	4

Multiply each number by 7 $\times 7$

3	5	8	1	9	4	10	2	6	7

Multiply each number by 2 $\times 2$

2	10	9	5	7	4	1	3	13	0

Multiply each number by 8 $\times 8$

1	5	6	9	2	0	8	3	13	4

Multiply each number by 6 $\times 6$

3	1	5	9	12	7	0	4	6	2

Multiply each number by 4 $\times 4$

6	2	0	9	1	14	5	3	7	4

Multiply each number by 7 $\times 7$

6	7	1	3	9	2	12	5	0	4

Multiply each number by 5 $\times 5$

3	5	8	1	9	4	10	2	12	7

Multiply each number by 3 $\times 3$

2	10	9	5	7	4	1	3	13	0

Divide each number by 2 $\div 2$

14	18	10	6	12	20	36	8	16	22

Divide each number by 8 $\div 8$

16	88	8	24	40	32	64	48	80	96

Divide each number by 3 $\div 3$

15	39	18	12	9	24	33	21	30	27

Divide each number by 5 $\div 5$

20	10	15	35	50	5	45	55	30	60

Divide each number by 8 $\div 8$

16	8	40	24	72	48	88	32	80	56

Divide each number by 4 $\div 4$

40	4	24	36	16	44	8	28	32	20

Divide each number by 3 $\div 3$

3	9	27	12	15	6	18	24	21	30

Divide each number by 5 $\div 5$

20	10	15	25	5	40	50	30	45	55

Divide each number by 7 $\div 7$

14	56	7	28	21	70	49	35	42	84

Divide each number by 4 $\div 4$

32	12	16	4	20	8	24	36	40	44

Divide each number by 6 $\div 6$

6	12	24	36	18	42	66	30	48	54

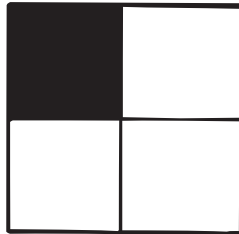
Divide each number by 9 $\div 9$

90	9	27	36	99	18	45	72	54	63

- FRACTIONS -

- A FRACTION IS A PART OF SOMETHING!!

- HERE'S AN EXAMPLE



The square is divided into 4 parts.
One is shaded. Therefore $\frac{1}{4}$ is shaded.

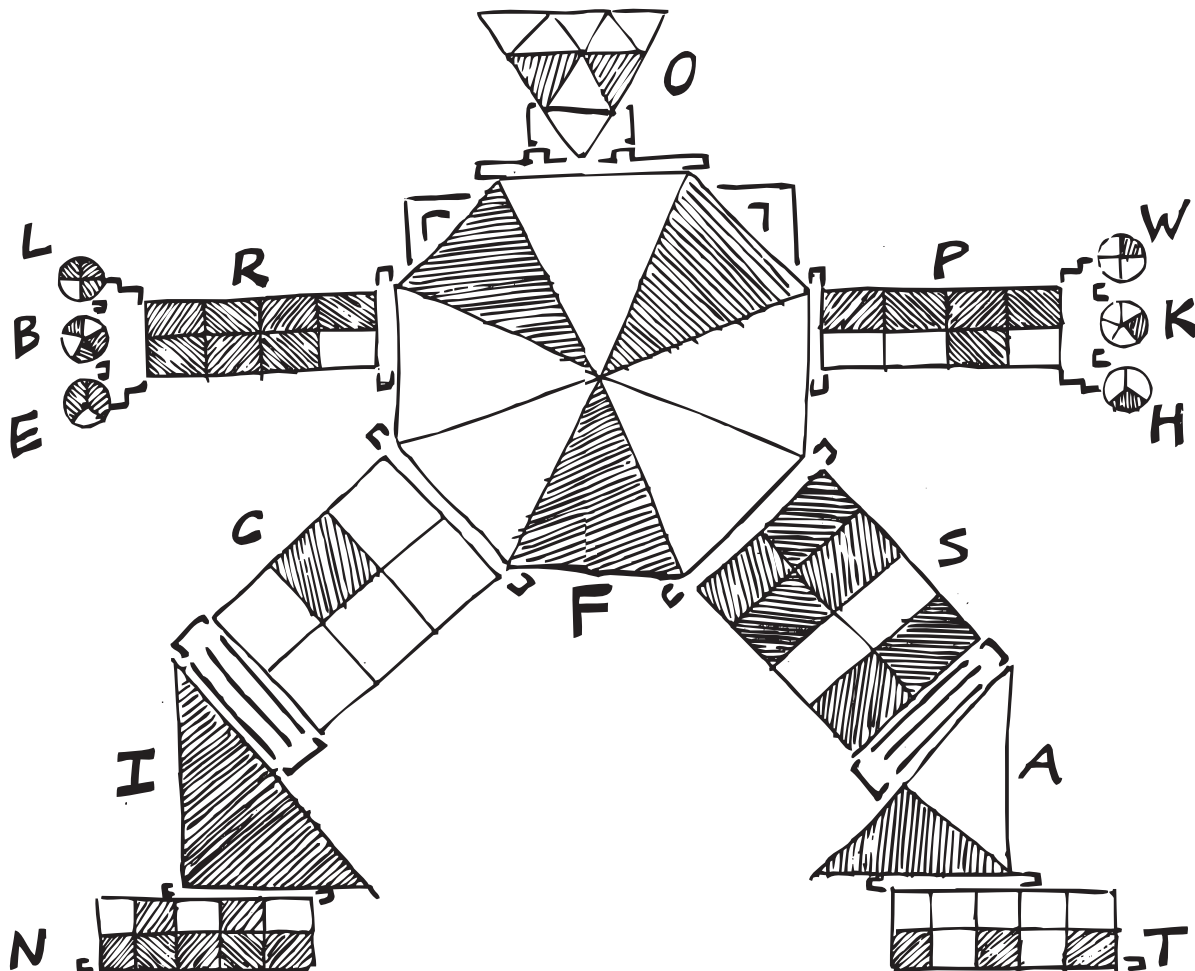
In the circle beside each shape, write the fraction of the shape that is shaded.

Exercise area containing 18 different shapes, each with a circle next to it for the student to write the fraction of the shaded area. The shapes and their shaded portions are:

- 1. A vertical rectangle divided into two equal halves, with the right half shaded.
- 2. A horizontal rectangle divided into four equal vertical strips, with the second and fourth strips shaded.
- 3. A square divided into a 3x3 grid of nine smaller squares, with four squares shaded in a checkerboard pattern.
- 4. A vertical rectangle divided into three equal horizontal sections, with the top section shaded.
- 5. A circle divided into four equal quadrants, with the top-left and bottom-left quadrants shaded.
- 6. A horizontal rectangle divided into a 2x8 grid of sixteen smaller rectangles, with eight rectangles shaded in a checkerboard pattern.
- 7. A right-angled triangle with the hypotenuse on the right, divided into two equal halves by a vertical line, with the left half shaded.
- 8. A circle divided into three equal sectors, with one sector shaded.
- 9. An inverted triangle divided into four equal smaller inverted triangles, with the three outer triangles shaded.
- 10. A circle divided into six equal sectors, with three sectors shaded.
- 11. A quarter-circle divided into four equal sectors, with three sectors shaded.
- 12. A right-angled triangle with the hypotenuse on the right, divided into four equal smaller right-angled triangles, with two triangles shaded.
- 13. A right-angled triangle with the hypotenuse on the right, divided into two equal halves by a vertical line, with the bottom half shaded.
- 14. A pentagon divided into five equal triangles meeting at the center, with one triangle shaded.
- 15. A 10x10 grid of one hundred small squares, with five squares shaded in a pattern.

FRACTION-MAN

How much is shaded? Write the letter from each body part above the corresponding fraction.

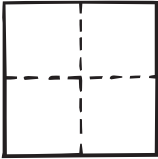
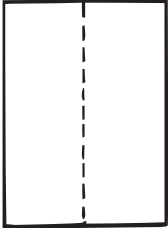
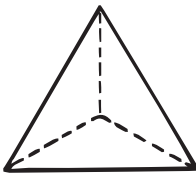
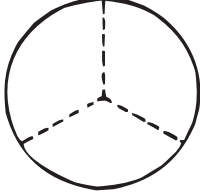
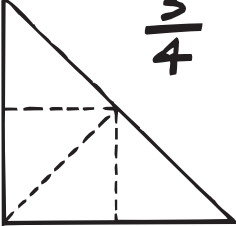
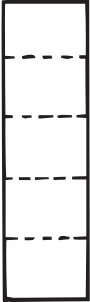
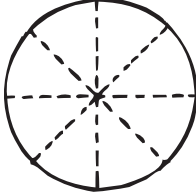
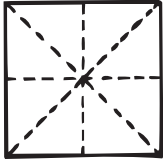
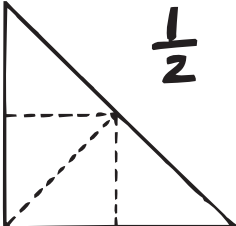
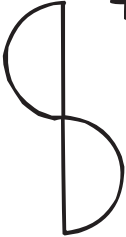
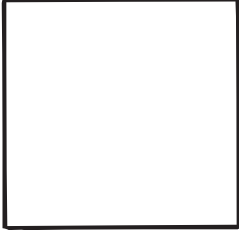
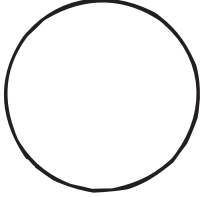

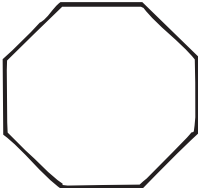
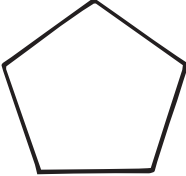



$$\frac{1}{2} \quad \frac{3}{8} \quad \frac{7}{8} \quad \frac{1}{2} \quad \frac{1}{6} \quad \frac{3}{10} \quad \frac{2}{9} \quad \frac{7}{10} \quad 1 \quad \frac{6}{8} \quad \frac{1}{2} \quad \frac{1}{6} \quad \frac{1}{3} \quad \frac{5}{8}$$

$$\frac{2}{9} \quad \frac{3}{8} \quad \frac{3}{8} \quad \frac{3}{10} \quad \frac{1}{3} \quad \frac{2}{3} \quad \frac{1}{4} \quad \frac{1}{3} \quad \frac{2}{9} \quad \frac{3}{4} \quad \frac{2}{3} \quad \frac{3}{5} \quad \frac{3}{4} \quad \frac{2}{9} \quad \frac{1}{6} \quad \frac{1}{5}$$

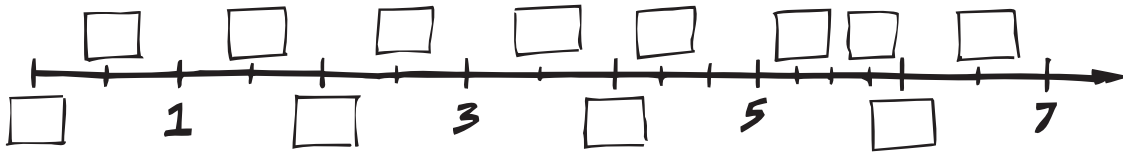


- NOW SHADE IN THESE SHAPES TO SHOW EACH FRACTION!

$\frac{1}{4}$ 	$\frac{1}{2}$ 	$\frac{2}{3}$ 	$\frac{1}{3}$ 
$\frac{3}{4}$ 	$\frac{4}{5}$ 	$\frac{7}{8}$ 	$\frac{1}{4}$ 
$\frac{1}{2}$ 	$\frac{1}{4}$ 	$\frac{2}{3}$ 	$\frac{1}{2}$ 
$\frac{5}{5}$ 	$\frac{3}{8}$ 	$\frac{2}{5}$ 	$\frac{5}{6}$ 

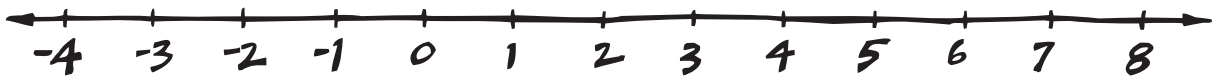
"COME FIND MY PLACE!"

START BY WRITING THE MISSING NUMBERS AND FRACTIONS IN THE BOXES ON THE LINE!

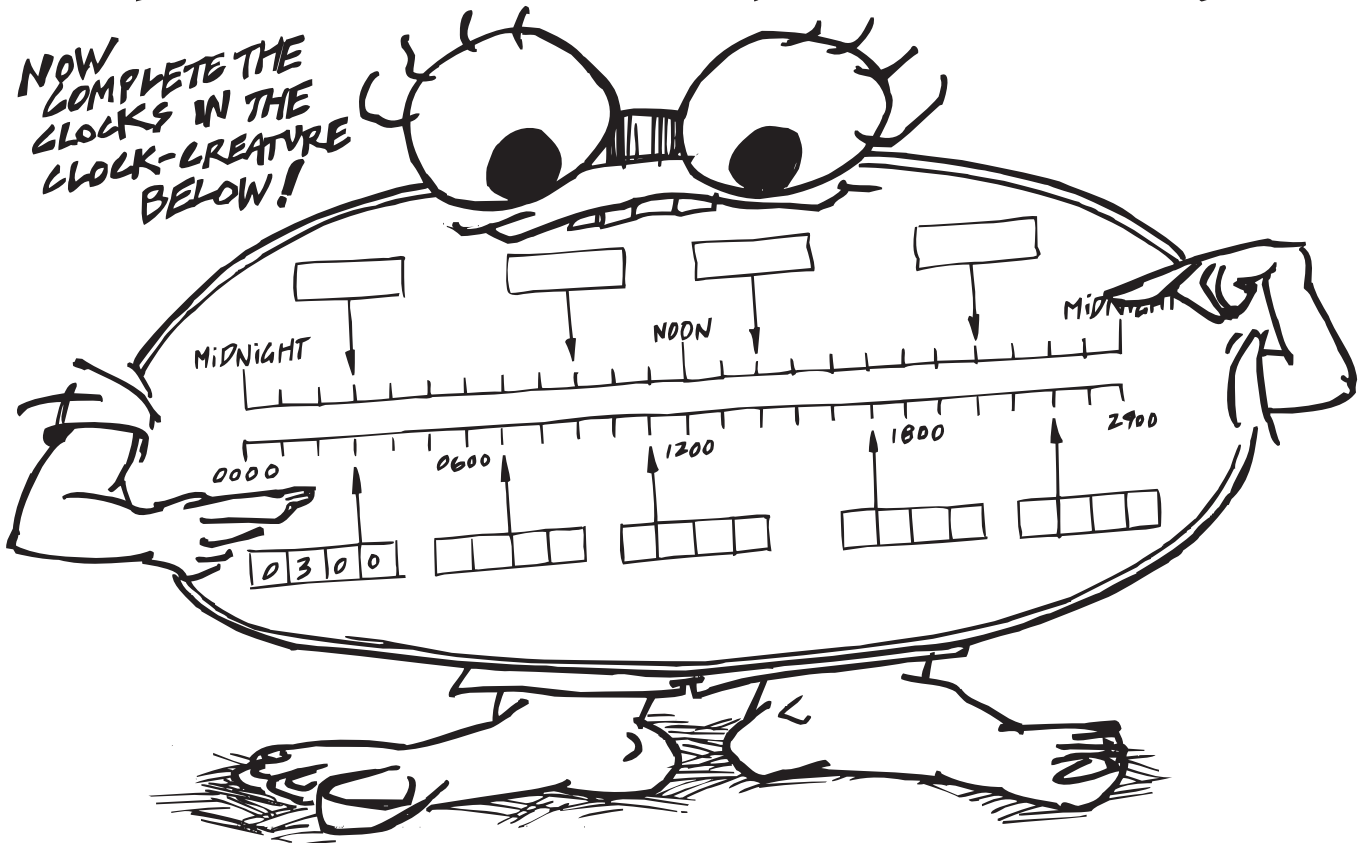


HERE ARE SOME PAIRS OF LETTERS AND NUMBERS. WRITE EACH LETTER ABOVE THE NUMBER LINE AT ITS CORRECT POSITION AND A SPECIAL MESSAGE WILL APPEAR!

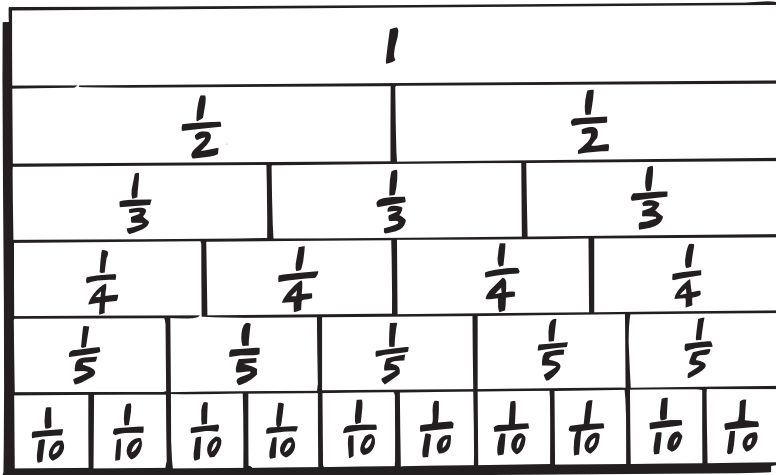
- | | | | |
|-------------------|-------------------|------------------|------------------|
| A 5 | M $-2\frac{1}{2}$ | U $\frac{1}{2}$ | C $4\frac{1}{2}$ |
| S $2\frac{1}{2}$ | E $7\frac{1}{10}$ | L $6\frac{5}{8}$ | S 1 |
| M $3\frac{1}{4}$ | S $5\frac{2}{3}$ | E $1\frac{1}{4}$ | I $2\frac{1}{9}$ |
| O $\frac{1}{15}$ | T 6 | Y -2 | H $-\frac{1}{2}$ |
| Y $3\frac{7}{10}$ | | | |



NOW COMPLETE THE CLOCKS IN THE CLOCK-CREATURE BELOW!



FURTHER FRACTIONS!



-EQUIVALENT FRACTIONS are fractions that are the same.

$\frac{2}{4}$ is the same as $\frac{1}{2}$ and $\frac{5}{10}$!

Using the diagrams, write down the equivalent fractions.

The first one is done for you !



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



$$\frac{1}{5} = \underline{\hspace{2cm}}$$



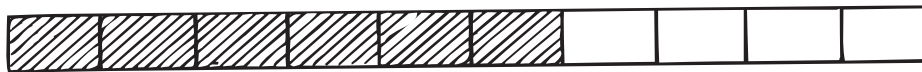
$$\frac{1}{2} = \underline{\hspace{2cm}}$$



$$\frac{3}{5} = \underline{\hspace{2cm}}$$



$$\frac{4}{4} = \underline{\hspace{2cm}}$$



Now use a $<$, $>$ or $=$ between each fraction.

1

$\frac{1}{3}$	$\frac{1}{2}$
$\frac{2}{3}$	$\frac{8}{10}$
$\frac{2}{3}$	$\frac{9}{10}$

2

$\frac{1}{10}$	$\frac{1}{5}$
$\frac{4}{5}$	$\frac{3}{4}$
$\frac{3}{4}$	$\frac{5}{10}$

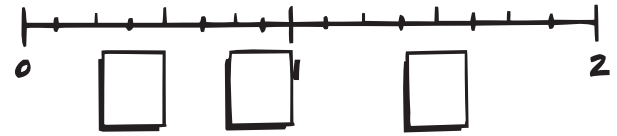
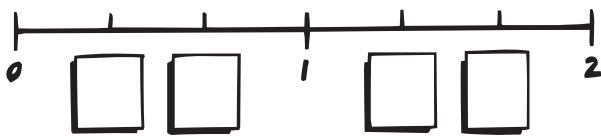
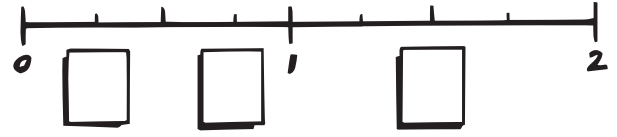
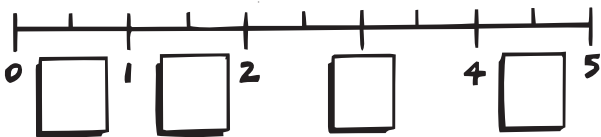
3

$\frac{1}{5}$	$\frac{1}{4}$
$\frac{1}{2}$	$\frac{5}{10}$
$\frac{3}{5}$	$\frac{2}{3}$

4

$\frac{1}{2}$	$\frac{2}{5}$
$\frac{3}{5}$	$\frac{3}{4}$
1	$\frac{9}{10}$

Fill in the boxes with the correct numbers.



Fill in the boxes.

$$\frac{4}{10} = \frac{\square}{5}$$

$$\frac{6}{8} = \frac{\square}{4}$$

$$\frac{5}{10} = \frac{\square}{2}$$

$$\frac{2}{6} = \frac{\square}{3}$$

$$\frac{8}{10} = \frac{\square}{5}$$

$$\frac{4}{8} = \frac{\square}{2}$$

$$\frac{3}{4} = \frac{\square}{12}$$

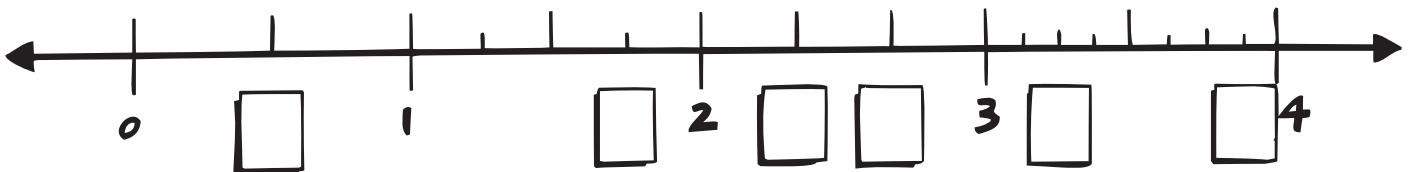
$$\frac{3}{5} = \frac{\square}{20}$$

$$\frac{1}{2} = \frac{\square}{40}$$

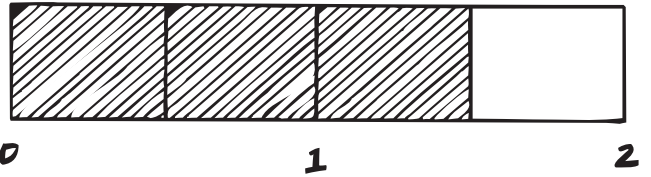
$$\frac{7}{10} = \frac{\square}{20}$$

$$\frac{4}{4} = \frac{\square}{\square}$$

$$\frac{6}{8} = \frac{\square}{\square}$$



-HOW DO YOU CHANGE $1\frac{1}{2}$ INTO A FRACTION?



There are 3 lots of $\frac{1}{2}$ in $1\frac{1}{2}$ so $1\frac{1}{2}$ into a fraction = $\frac{3}{2}$

Now write these as fractions.



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

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

$$1\frac{2}{3} = \frac{\quad}{3}$$

$$1\frac{3}{4} = \frac{\quad}{4}$$

$$1\frac{3}{5} = \frac{\quad}{5}$$

$$2\frac{1}{10} = \frac{\quad}{10}$$

Write these fractions as mixed numbers.

$$\frac{7}{4} = 1\frac{\quad}{4}$$

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

$$\frac{7}{3} = \frac{\quad}{3}$$

$$\frac{5}{2} = \frac{\quad}{2}$$

$$\frac{13}{10} = \frac{\quad}{10}$$

$$\frac{12}{5} = \frac{\quad}{5}$$

-EQUIVALENT FRACTIONS

Equivalent fractions are fractions that are the same.

Here are some equivalent fractions for $\frac{3}{4}$ $E = \left\{ \frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20} \right\}$

Fill in the gaps to find the equivalent fractions.

$$\frac{1}{2} = \left\{ \frac{\quad}{4}, \frac{\quad}{6}, \frac{\quad}{8}, \frac{\quad}{10}, \frac{\quad}{12}, \frac{\quad}{14} \right\}$$

$$\frac{1}{3} = \left\{ \frac{\quad}{6}, \frac{\quad}{9}, \frac{\quad}{12}, \frac{\quad}{15}, \frac{\quad}{18} \right\}$$

$$\frac{1}{4} = \left\{ \frac{\quad}{8}, \frac{\quad}{12}, \frac{\quad}{16} \right\}$$

$$\frac{1}{5} = \left\{ \frac{\quad}{10}, \frac{\quad}{15}, \frac{\quad}{20}, \frac{\quad}{100}, \frac{\quad}{500}, \frac{\quad}{1000} \right\}$$

$$\frac{1}{6} = \left\{ \frac{\quad}{12}, \frac{\quad}{18}, \frac{\quad}{24}, \frac{\quad}{30}, \frac{\quad}{36} \right\}$$

- FAMILIES OF FRACTIONS

FILL IN THE GAPS TO MAKE SOME EQUIVALENT FRACTIONS!

$$\frac{1}{3} = \frac{\quad}{6} \quad \frac{1}{4} = \frac{\quad}{12} \quad \frac{7}{10} = \frac{\quad}{20} \quad \frac{1}{5} = \frac{\quad}{15} \quad \frac{3}{4} = \frac{\quad}{40}$$

$$\frac{2}{3} = \frac{\quad}{9} \quad \frac{4}{5} = \frac{\quad}{20} \quad \frac{3}{8} = \frac{\quad}{40} \quad \frac{12}{16} = \frac{\quad}{4} \quad \frac{2}{8} = \frac{\quad}{4}$$

$$\frac{8}{12} = \frac{\quad}{3} \quad \frac{10}{16} = \frac{5}{\quad} \quad \frac{25}{30} = \frac{5}{\quad} \quad \frac{9}{18} = \frac{1}{\quad} \quad \frac{21}{30} = \frac{7}{\quad}$$

$$\frac{1}{2} = \frac{\quad}{6} = \frac{10}{\quad} = \frac{\quad}{24}$$

$$\frac{3}{4} = \frac{\quad}{12} = \frac{12}{\quad} = \frac{\quad}{20}$$

$$\frac{8}{10} = \frac{\quad}{5} = \frac{\quad}{20} = \frac{32}{\quad}$$

$$\frac{5}{8} = \frac{\quad}{16} = \frac{15}{\quad} = \frac{\quad}{40}$$

- NOW SIMPLIFY THESE FRACTIONS TO MAKE THEM AS SMALL AS YOU CAN!

$$\frac{6}{10} = \frac{\quad}{\quad} \quad \frac{14}{28} = \frac{\quad}{\quad} \quad \frac{20}{35} = \frac{\quad}{\quad} \quad \frac{21}{24} = \frac{\quad}{\quad} \quad \frac{12}{48} = \frac{\quad}{\quad}$$

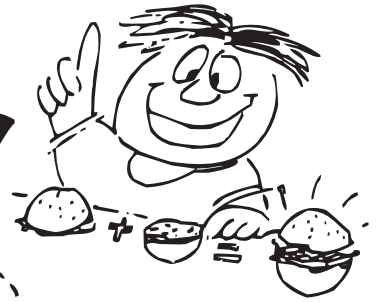
SHADE IN EACH BOX WHICH CONTAINS A FRACTION THAT IS EQUIVALENT TO THE FRACTION AT THE BOTTOM OF THAT COLUMN!



$\frac{10}{30}$	$\frac{20}{70}$	$\frac{9}{30}$	$\frac{10}{30}$	$\frac{10}{25}$	$\frac{15}{18}$	$\frac{7}{28}$	$\frac{15}{36}$	$\frac{20}{35}$	$\frac{21}{28}$	$\frac{21}{27}$
$\frac{7}{15}$	$\frac{8}{28}$	$\frac{30}{90}$	$\frac{8}{11}$	$\frac{22}{55}$	$\frac{25}{36}$	$\frac{2}{8}$	$\frac{2}{7}$	$\frac{12}{21}$	$\frac{18}{22}$	$\frac{14}{18}$
$\frac{5}{18}$	$\frac{14}{49}$	$\frac{9}{40}$	$\frac{5}{12}$	$\frac{14}{35}$	$\frac{30}{30}$	$\frac{10}{40}$	$\frac{21}{60}$	$\frac{28}{49}$	$\frac{30}{40}$	$\frac{35}{45}$
$\frac{8}{20}$	$\frac{10}{35}$	$\frac{21}{50}$	$\frac{1}{22}$	$\frac{18}{45}$	$\frac{25}{30}$	$\frac{5}{20}$	$\frac{9}{16}$	$\frac{16}{28}$	$\frac{9}{15}$	$\frac{6}{8}$
$\frac{3}{12}$	$\frac{1}{6}$	$\frac{16}{50}$	$\frac{7}{16}$	$\frac{4}{7}$	$\frac{30}{42}$	$\frac{4}{9}$	$\frac{4}{9}$	$\frac{6}{10}$	$\frac{15}{24}$	$\frac{21}{30}$
$\frac{2}{6}$	$\frac{4}{14}$	$\frac{18}{60}$	$\frac{8}{18}$	$\frac{4}{10}$	$\frac{20}{24}$	$\frac{11}{44}$	$\frac{3}{9}$	$\frac{8}{14}$	$\frac{9}{12}$	$\frac{28}{36}$
$\frac{7}{21}$	$\frac{10}{28}$	$\frac{6}{15}$	$\frac{9}{14}$	$\frac{20}{50}$	$\frac{30}{40}$	$\frac{4}{16}$	$\frac{20}{50}$	$\frac{24}{36}$	$\frac{18}{24}$	$\frac{14}{20}$
$\frac{5}{15}$	$\frac{5}{11}$	$\frac{5}{12}$	$\frac{1}{3}$	$\frac{12}{30}$	$\frac{10}{12}$	$\frac{6}{24}$	$\frac{12}{30}$	$\frac{12}{28}$	$\frac{15}{20}$	$\frac{42}{45}$
$\frac{4}{12}$	$\frac{4}{16}$	$\frac{10}{30}$	$\frac{1}{4}$	$\frac{16}{40}$	$\frac{20}{30}$	$\frac{3}{12}$	$\frac{14}{21}$	$\frac{5}{8}$	$\frac{24}{32}$	$\frac{28}{35}$
$\frac{6}{18}$	$\frac{6}{21}$	$\frac{12}{40}$	$\frac{2}{3}$	$\frac{6}{15}$	$\frac{15}{25}$	$\frac{9}{36}$	$\frac{6}{24}$	$\frac{8}{15}$	$\frac{6}{8}$	$\frac{8}{10}$

$\frac{1}{3}$	$\frac{2}{7}$	$\frac{3}{10}$	$\frac{6}{11}$	$\frac{2}{5}$	$\frac{5}{6}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{4}{7}$	$\frac{3}{4}$	$\frac{7}{9}$
---------------	---------------	----------------	----------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------

HALVE IT... ...AND YOU HAVE IT!



$$\begin{array}{c} \text{Diagram of a circle divided into 2 halves, with 1 half shaded.} \\ + \\ \text{Diagram of a circle divided into 2 halves, with 1 half shaded.} \\ = \\ \frac{1}{2} + \frac{1}{2} = \end{array}$$

$$\begin{array}{c} \text{Diagram of a circle divided into 3 parts, with 2 parts shaded.} \\ - \\ \text{Diagram of a circle divided into 3 parts, with 1 part shaded.} \\ = \\ \frac{2}{3} - \frac{1}{3} = \end{array}$$

$$\begin{array}{c} \text{Diagram of a square divided into 4 smaller squares, with 1 square shaded.} \\ + \\ \text{Diagram of a square divided into 4 smaller squares, with 2 squares shaded.} \\ = \\ \frac{1}{4} + \frac{2}{4} = \end{array}$$

$$\begin{array}{c} \text{Diagram of a rectangle divided into 5 vertical strips, with 4 strips shaded.} \\ - \\ \text{Diagram of a rectangle divided into 5 vertical strips, with 2 strips shaded.} \\ = \\ \frac{4}{5} - \frac{2}{5} = \end{array}$$

NOW ARE YOU READY FOR THESE..?

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

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

$$\frac{3}{7} + \frac{3}{7} = \frac{6}{7}$$

$$\frac{2}{7} + \frac{4}{7} = \frac{6}{7}$$

$$\frac{4}{9} + \frac{4}{9} = \frac{8}{9}$$

$$\frac{4}{11} + \frac{6}{11} = \frac{10}{11}$$

$$\frac{13}{15} - \frac{6}{15} = \frac{7}{15}$$

$$\frac{6}{11} - \frac{2}{11} = \frac{4}{11}$$

$$\frac{10}{13} - \frac{5}{13} = \frac{5}{13}$$

$$\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$$

$$\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$$

$$\frac{6}{10} + \frac{3}{10} = \frac{9}{10}$$

$$\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$$

$$\frac{4}{6} - \frac{1}{6} = \frac{3}{6}$$

$$\frac{6}{10} - \frac{3}{10} = \frac{3}{10}$$

$$\frac{6}{13} + \frac{4}{13} = \frac{10}{13}$$

$$\frac{8}{13} + \frac{5}{13} = \frac{13}{13}$$

$$\frac{9}{13} - \frac{9}{13} = 0$$

WHO'S PART OF OUR TEAM?

$$\frac{2}{4} \quad \frac{4}{7} \quad \frac{1}{7} \quad \frac{4}{7} \quad \frac{5}{9} \quad \frac{6}{9} \quad \frac{3}{5} \quad \frac{8}{9} \quad \frac{5}{9} \quad \frac{4}{5} \quad \frac{4}{9} \quad !$$

$$F = \frac{4}{5} - \frac{1}{5}$$

$$T = \frac{1}{4} + \frac{1}{4}$$

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

$$K = \frac{7}{9} - \frac{3}{9}$$

$$E = \frac{6}{7} - \frac{5}{7}$$

$$L = \frac{2}{9} + \frac{4}{9}$$

$$H = \frac{3}{7} + \frac{1}{7}$$

$$B = \frac{5}{9} + \frac{3}{9}$$

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

ADDING AND SUBTRACTING FRACTIONS!

Each fraction must have the same bottom line.
Try these. The first two are done for you !

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

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

$$\frac{5}{8} + \frac{2}{8} = \boxed{}$$

$$\frac{7}{8} - \frac{4}{8} = \boxed{}$$

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

$$\frac{1}{7} + \frac{2}{7} = \boxed{}$$

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

$$\frac{9}{10} - \frac{6}{10} = \boxed{}$$

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

$$\frac{4}{6} + \frac{1}{6} = \boxed{}$$

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

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

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

$$\frac{3}{10} + \frac{6}{10} = \boxed{}$$

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

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

These examples need two steps.

$$\frac{3}{4} + \frac{4}{4} = \frac{7}{4}$$

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

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

$$= \boxed{}$$

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

$$= \boxed{}$$

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

$$= \boxed{}$$

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

$$= \boxed{}$$

$$\frac{7}{8} + \frac{5}{8} = \boxed{}$$

$$= \boxed{}$$

$$\frac{2}{5} + \frac{6}{5} = \boxed{}$$

$$= \boxed{}$$

$$\frac{7}{10} + \frac{6}{10} = \boxed{}$$

$$= \boxed{}$$

Now put these **FRACTIONS** into their correct order from smallest to largest.



PERCENTAGES %

Percent means divided by 100.

10% means 10 out of 100 or $\frac{10}{100}$ or 0.1

27% means 27 out of 100 or $\frac{27}{100}$ or 0.27

- Write these percentages as fractions.

15% _____ 25% _____ 30% _____ 12% _____

75% _____ 60% _____ 45% _____ 99% _____

100% _____ 12.5% _____ 0.5% _____ 0.1% _____

- Write these fractions as percentages.

$\frac{10}{100} = \underline{\quad}\%$ $\frac{16}{100} = \underline{\quad}\%$ $\frac{25}{100} = \underline{\quad}\%$ $\frac{50}{100} = \underline{\quad}\%$

$\frac{3}{20} = \frac{\quad}{100} = \underline{\quad}\%$ $\frac{10}{20} = \frac{\quad}{100} = \underline{\quad}\%$ $\frac{7}{10} = \frac{\quad}{100} = \underline{\quad}\%$

$\frac{3}{50} = \frac{\quad}{100} = \underline{\quad}\%$ $\frac{9}{25} = \frac{\quad}{100} = \underline{\quad}\%$ $\frac{4}{5} = \frac{\quad}{100} = \underline{\quad}\%$

- Write these percentages as decimals.

27% = 0._____ 60% = 0._____ 25% = 0._____ 50% = 0._____

30% = 0._____ 45% = 0._____ 19% = 0._____ 27% = 0._____

- Write these decimals as percentages.

0.54 = _____% 0.82 = _____% 0.55 = _____% 0.33 = _____%

0.21 = _____% 0.95 = _____% 0.6 = _____% 0.17 = _____%

0.05 = _____% 0.75 = _____% 0.02 = _____% 0.37 = _____%

PAWKY PERCENTAGE PAGE

$$\frac{21}{100} = \text{---} \%$$

$$\frac{37}{100} = \text{---} \%$$

$$\frac{43}{100} = \text{---} \%$$

$$\frac{59}{100} = \text{---} \%$$

$$\frac{94}{100} = \text{---} \%$$

$$\frac{65}{100} = \text{---} \%$$

$$\frac{36}{100} = \text{---} \%$$

$$\frac{15}{100} = \text{---} \%$$

$$\frac{1}{10} = \frac{\text{---}}{100} = \text{---} \%$$

$$\frac{9}{10} = \frac{\text{---}}{100} = \text{---} \%$$

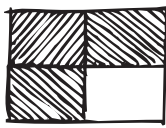
$$\frac{3}{25} = \frac{\text{---}}{100} = \text{---} \%$$

$$\frac{3}{20} = \frac{\text{---}}{100} = \text{---} \%$$

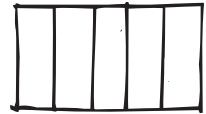
$$\frac{9}{20} = \frac{\text{---}}{100} = \text{---} \%$$

$$\frac{3}{50} = \frac{\text{---}}{100} = \text{---} \%$$

WHAT PERCENTAGE IS SHADED?



SHADE IN THE GIVEN PERCENT



33 $\frac{1}{3}$ %

70%

40%

10%

80%

PERCY PIG PERCENTAGE PUZZLES!

HOW DO YOU KNOW WHEN YOU'RE AT PERCY'S?

9 95 38 28 65 84 94 38 56 70 84 28 56 17 70 9 20

WHAT DOES THE VET GIVE PERCY FOR HIS SORES?

70 74 55 38 74 56 52 80 55 38 52 9



G $\frac{17}{100} = \text{---} \%$

T $\frac{9}{100} = \text{---} \%$

P $\frac{7}{25} = \text{---} \%$

C $\frac{94}{100} = \text{---} \%$

Y $\frac{2}{10} = \text{---} \%$

S $\frac{7}{10} = \text{---} \%$

K $\frac{8}{10} = \text{---} \%$

M $\frac{11}{20} = \text{---} \%$

L $\frac{13}{20} = \text{---} \%$

H $\frac{14}{20} = \text{---} \%$

N $\frac{13}{25} = \text{---} \%$

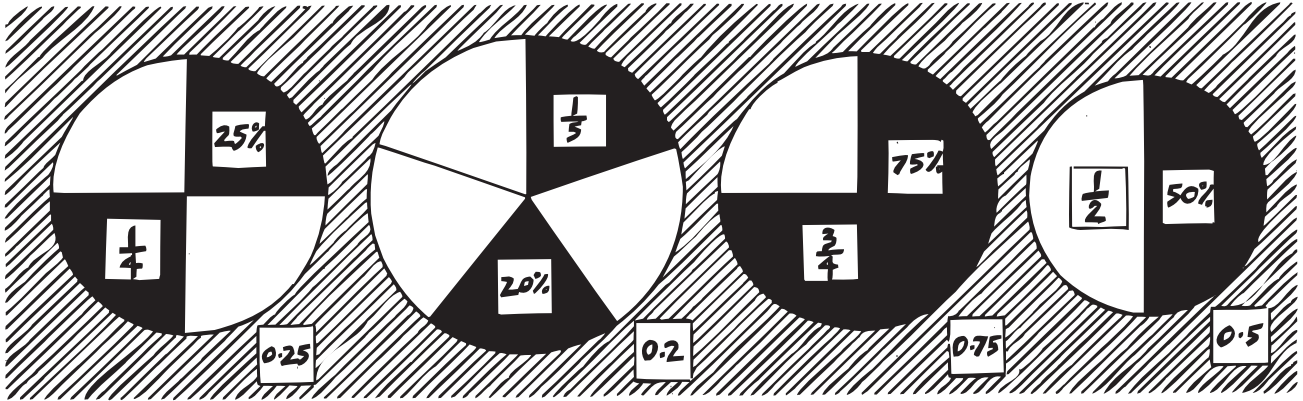
A $\frac{21}{25} = \text{---} \%$

E $\frac{19}{50} = \text{---} \%$

I $\frac{28}{50} = \text{---} \%$

O $\frac{37}{50} = \text{---} \%$

Equivalent percentages, fractions, and decimals.



Write the correct numerals in the spaces.

1 $50\% = \frac{\quad}{100} = \frac{\quad}{2}$ **2** $25\% = \frac{\quad}{100} = \frac{\quad}{4}$
3 $75\% = \frac{\quad}{100} = \frac{\quad}{4}$ **4** $20\% = \frac{\quad}{100} = \frac{\quad}{5}$

Complete this table.

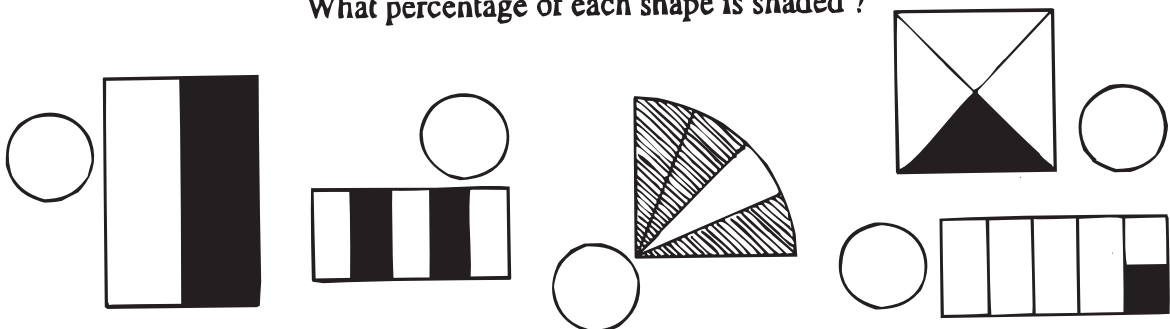
Percentage	10%	20%				60%	70%	80%		
Tenths			$\frac{3}{10}$	$\frac{4}{10}$	$\frac{5}{10}$				$\frac{9}{10}$	$\frac{10}{10}$

Match up the percentages with the fractions.

$\frac{1}{5}$	$\frac{4}{5}$	$\frac{1}{4}$	1	$\frac{1}{2}$
25%	50%	20%	80%	100%

Note: A dashed arrow points from 25% to 1/5.

What percentage of each shape is shaded?



- PERCENTAGES OF NUMBERS!

1

To find 50% of 10 :

$$\frac{50}{100} \times 10$$

$$\text{or } \frac{1}{2} \text{ of } 10 = 5$$

\therefore 50% of 10 is 5

Find 50% of :

20	26	34	50	68	74	90	99

2

Find 25% of 28 :

$$\frac{25}{100} \times 28$$

$$\text{or } \frac{1}{4} \times 28 = \frac{28}{4} = 7$$

\therefore 25% of 28 is 7

Find 25% of :

12	20	36	40	80	200	1000	50

3

Find 30% of 20 :

$$\frac{30}{100} \times 20$$

$$\text{or } \frac{3}{10} \times 20 = \frac{60}{10} = 6$$

\therefore 30% of 20 is 6

Find 30% of :

21	30	36	60	100	210	1000	150

-PERCENTAGES OF QUANTITIES

1

- A woman's income is \$500 per week.
- She gets a 10% raise.
- How much does she now earn ?

THIS MEANS 10% OF 500

$$= \frac{10}{100} \times 500$$

or $\frac{1}{10} \times 500$

$$= 50$$

∴ she gets a \$50 raise and now earns \$550 !

2

- A shop offers a discount of 30% off all its prices.
- You see a telephone for \$150.

THIS MEANS 30% OF 150

$$= \frac{30}{100} \times 150$$

or $\frac{3}{10} \times 150$

$$= 45$$

How much is the discount ?

You get a \$45 discount and only pay (\$150 - \$45) \$105

3

- Your parents decide to give you a 20% raise in your allowance.

- You get \$5 a week now.

- How much will you get after the raise ?

.....

.....

.....

.....

.....

.....

4

- You save \$600 and spend 30% of it.
- How much do you have left ?

.....

.....

.....

5

- A factory has 1200 employees.
- 75% of them are women.
- How many men and women work at the factory ?

.....

.....

6

- The high score on a video game is 1200.
- You score 10% less than this.
- What is your score ?

.....

.....

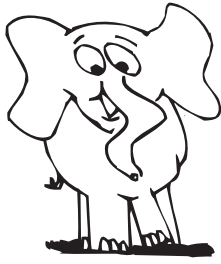
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7

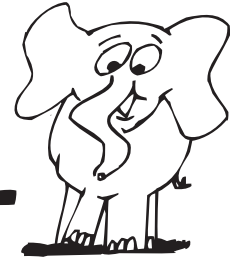
- You eat 20% of the chocolates in a box that has 50 chocolates
- How many chocolates did you eat ?
- How many are left ?

.....

.....



CRAZY CONVERSIONS



% → FRACTION

% → DECIMAL

$19\% = \frac{\quad}{100} \quad 20\% = \frac{\quad}{100} = \frac{\quad}{5}$

$19\% = 0.\underline{\quad} \quad 60\% = \underline{\quad}$

$63\% = \frac{\quad}{100} \quad 40\% = \frac{\quad}{100} = \frac{\quad}{5}$

$28\% = 0.\underline{\quad} \quad 25\% = \underline{\quad}$

$81\% = \frac{\quad}{100} \quad 50\% = \frac{\quad}{100} = \frac{\quad}{2}$

$56\% = 0.\underline{\quad} \quad 8\% = \underline{\quad}$

$99\% = \frac{\quad}{100} \quad 75\% = \frac{\quad}{100} = \frac{\quad}{4}$

$94\% = 0.\underline{\quad} \quad 5\% = \underline{\quad}$

$7\% = \frac{\quad}{100} \quad 85\% = \frac{\quad}{100} = \frac{\quad}{20}$

$10\% = 0.\underline{\quad} \quad 150\% = \underline{\quad}$

IMPORTANT ELEPHANT INFORMATION!

TO UNCOVER SOME IMPORTANT FACTS ABOUT ELEPHANTS, EACH LETTER BELOW NEEDS A CONVERSION

$\boxed{B} = 30\% \quad \boxed{C} = 23\% \quad \boxed{K} = 8\% \quad \boxed{M} = 90\% \quad \boxed{R} = 35\% \quad \boxed{W} = 57\% \quad \boxed{H} = 16\%$

$\boxed{P} = 41\% \quad \boxed{Z} = 14\% \quad \boxed{I} = 500\% \quad \boxed{G} = 28\% \quad \boxed{O} = 33\frac{1}{3}\% \quad \boxed{S} = 31\% \quad \boxed{E} = 50\%$

$\boxed{L} = 11\% \quad \boxed{A} = 60\% \quad \boxed{Q} = 40\% \quad \boxed{N} = 12\frac{1}{2}\% \quad \boxed{T} = 200\% \quad \boxed{V} = 66\frac{2}{3}\% \quad \boxed{F} = 74\%$

WHAT DO YOU GIVE TO SICK ELEPHANTS?

$\frac{2}{20} \quad \frac{2}{3} \quad \frac{1}{8} \quad \frac{2}{25} \quad 4 \quad \frac{2}{3} \quad 5 \quad \frac{11}{100} \quad \frac{11}{100} \quad 5 \quad .14 \quad .5 \quad \frac{2}{20} \quad .31$

HOW DO YOU MAKE AN ELEPHANT FLY?

$.31 \quad 2 \quad \frac{3}{5} \quad \frac{7}{20} \quad 2 \quad .57 \quad 5 \quad 2 \quad \frac{4}{25} \quad \frac{3}{5} \quad 2 \quad .57 \quad \frac{1}{3} \quad \frac{9}{10} \quad .5 \quad 2 \quad \frac{7}{20} \quad .5 \quad .14 \quad 5 \quad \frac{41}{100}$

WHY DID THE LADY ELEPHANT STOP TAP DANCING?

$.31 \quad \frac{4}{25} \quad .5 \quad \frac{37}{50} \quad .5 \quad \frac{11}{100} \quad \frac{11}{100} \quad 5 \quad \frac{1}{8} \quad 2 \quad \frac{1}{3} \quad 2 \quad \frac{4}{25} \quad .5 \quad .31 \quad 5 \quad \frac{1}{8} \quad \frac{2}{25}$

WHAT DO YOU GET IF YOU CROSS A KANGAROO & ELEPHANT?

$.3 \quad 5 \quad \frac{7}{25} \quad \frac{4}{25} \quad \frac{1}{3} \quad \frac{11}{100} \quad .5 \quad .31 \quad \frac{3}{5} \quad .23 \quad \frac{7}{20} \quad \frac{1}{3} \quad .31 \quad .31 \quad \frac{3}{5} \quad \frac{2}{3} \quad .31 \quad 2 \quad \frac{7}{20} \quad \frac{3}{5} \quad \frac{11}{100} \quad 5 \quad \frac{3}{5}$

QUOTE - A - BILL QUANTITIES

A DISCOUNT IS _____



SHOP PRICE = \$ 60
 DISCOUNT = 10% of \$60
 = _____ x _____

SALE PRICE = \$ _____



SHOP PRICE = \$ 42
 DISCOUNT = 50% of \$42
 = $\frac{1}{2}$ x _____

SALE PRICE = \$ _____

DO THE CALCULATIONS TO COMPLETE THIS TABLE!

ORIGINAL PRICE	BIKE \$250	HAT \$12	BOOK \$40	TAPE \$10	HOLIDAY \$800	SOCKS \$5
% DISCOUNT	20%	25%	10%	30%	5%	40%
AMOUNT OF DISCOUNT						
SALE PRICE						

G.S.T. IS _____

PHONE RENTAL = \$ 30
 TOLL ACCOUNT = \$ 18
 TOTAL _____

+ 12.5% G.S.T. = \$ _____

FINAL BILL = \$ _____

GAS ACCOUNT = \$ 13
 SERVICE FEE = \$ 7
 TOTAL _____

+ 12.5% G.S.T. = \$ _____

FINAL BILL = \$ _____

COMPLETE THE TABLE TO UNCOVER A SAD QUOTE!

ACCOUNT	16c	56c	\$24	80c	\$32	72c	\$40	\$88
+12.5%G.S.T.	S	A	V	L	K	B	M	G
TOTAL BILL	F	I	R	V	E	O	T	N

 81 3 36 27 63 99 18 10 7 45 63 81 99 5 7 4 36 2 81 99 36 11 81 9 9 0 2 4 5

- MORE ON PERCENT -

LANA GOT 40 MARKS OUT OF 80. SHE SCORED _____ %
 GANA GOT 37 MARKS OUT OF 50. SHE SCORED _____ %
 SITU GOT 19 MARKS OUT OF 25. SHE SCORED _____ %
 FITU GOT 8 MARKS OUT OF 10. SHE SCORED _____ %

WHOSE RESULT WAS THE BEST? _____

ANNA KEPT A RECORD OF HER EARNINGS AND SAVINGS FOR THE 5 WEEKS SHE WORKED.

COMPLETE HER TABLE!

	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5
EARNINGS	\$ 100	\$ 90	\$ 120	\$ 80	\$ 150
SAVINGS	\$ 48	\$ 45	\$ 66	\$ 32	\$ 60
% SAVED					

NOW LINE UP EACH SUM WITH ITS CORRECT ANSWER TO COMPLETE THE SENTENCE!

WHAT % IS 30 OF 60	◆ 13	◆ 25
WHAT % IS 8 OF 20	◆ 10	◆ 10
WHAT % IS 5 OF 25	◆ 3	◆ 50 (THIS ONE IS DONE FOR YOU)
WHAT % IS 9 OF 90	◆ 6	◆ 72
WHAT % IS 14 OF 280	◆ 5	◆ 35
WHAT % IS 2 OF 16	◆ 9	◆ 40
WHAT % IS 12 OF 48	◆ 18	◆ 100
WHAT % IS 3 OF 120	◆ 16	◆ 82
WHAT % IS 21 OF 70	◆ 1	◆ 12.5
WHAT % IS 24 OF 40	◆ 17	◆ 60
FIND 10% OF 950	◆ 5	◆ 81
FIND 20% OF 500	◆ 15	◆ 20
FIND 25% OF 300	◆ 11	◆ 2.5
FIND 40% OF 180	◆ 12	◆ 95
FIND 50% OF 164	◆ 7	◆ 90
FIND 60% OF 150	◆ 14	◆ 75
FIND 75% OF 108	◆ 8	◆ 5
FIND 100% OF 35	◆ 2	◆ 30

THE SAW-DOCTOR'S JOURNEY INTO AFRICA WAS TO...

.....

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----

DECIMALS

Our numbering system is based on tens. Each digit has a place value.

Decimals include numbers less than 1.

Here are some decimal fractions



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

$$0.7 = \frac{7}{10}$$

$$1.6 = 1 \frac{6}{10}$$

$$0.11 = \frac{11}{100}$$

$$0.135 = \frac{135}{1000}$$

Write these decimals as fractions

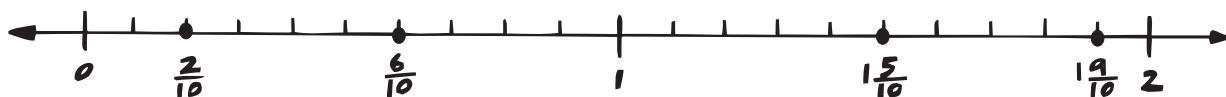
$0.4 \quad \underline{\hspace{2cm}} \quad 0.3 \quad \underline{\hspace{2cm}} \quad 0.6 \quad \underline{\hspace{2cm}} \quad 0.5 \quad \underline{\hspace{2cm}} \quad 3.2 \quad \underline{\hspace{2cm}}$

$2.7 \quad \underline{\hspace{2cm}} \quad 1.4 \quad \underline{\hspace{2cm}} \quad 0.1 \quad \underline{\hspace{2cm}} \quad 1.1 \quad \underline{\hspace{2cm}} \quad 2.0 \quad \underline{\hspace{2cm}}$

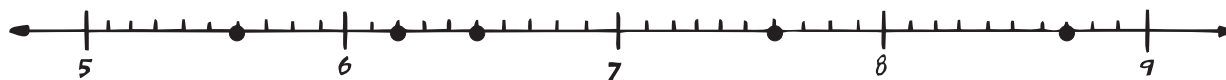
$0.01 \quad \underline{\hspace{2cm}} \quad 0.43 \quad \underline{\hspace{2cm}} \quad 0.62 \quad \underline{\hspace{2cm}} \quad 0.22 \quad \underline{\hspace{2cm}} \quad 0.05 \quad \underline{\hspace{2cm}}$

$1.21 \quad \underline{\hspace{2cm}} \quad 4.05 \quad \underline{\hspace{2cm}} \quad 6.00 \quad \underline{\hspace{2cm}} \quad 7.12 \quad \underline{\hspace{2cm}} \quad 1.11 \quad \underline{\hspace{2cm}}$

The number line below is divided into tenths. Different points are shown.



What numbers are shown on these number lines





Show these decimal numbers on the number line above.

0.2 0.6 0.9 1.4 1.7 2.5

REMEMBER

> means "is greater than"

< means "is less than"

Put in the > or < signs

$0.5 _ 0.2$ $0.6 _ 0.9$

$0.55 _ 0.5$ $2.1 _ 1.9$

$2.44 _ 2.5$ $6.09 _ 6.1$

$0.24 _ 0.9$ $0.76 _ 0.5$

$0.99 _ 0.999$ $0.83 _ 0.81$

- NOW WRITE THESE FRACTIONS AS DECIMALS!

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

$\frac{4}{10} = _$

$\frac{5}{10} = _$

$\frac{20}{100} = _$

$\frac{36}{100} = _$

$\frac{6}{100} = _$

$\frac{45}{10} = _$

$\frac{800}{100} = _$

$\frac{37}{10} = _$

$\frac{14}{100} = _$

$\frac{416}{100} = _$

$\frac{12}{100} = _$

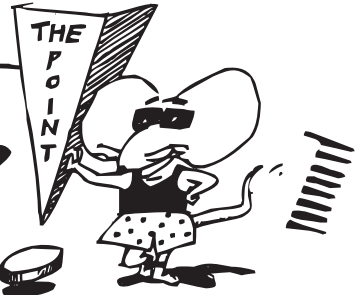
$\frac{1}{100} = _$

$\frac{16}{10} = _$

$\frac{125}{10} = _$

$\frac{190}{100} = _$

LET'S GET TO RA POINT WITH DAVE!!



- DAVE'S EXCELLENT DECIMAL ADDITION

$\begin{array}{r} 0.1 \\ 0.1 \\ \hline \end{array}$	$\begin{array}{r} 0.1 \\ 0.3 \\ \hline \end{array}$	$\begin{array}{r} 0.6 \\ 0.2 \\ \hline \end{array}$	$\begin{array}{r} 0.5 \\ 0.5 \\ \hline \end{array}$	$\begin{array}{r} 1.2 \\ 2.3 \\ \hline \end{array}$
$\begin{array}{r} 4.1 \\ 3.6 \\ \hline \end{array}$	$\begin{array}{r} 3.5 \\ 2.2 \\ \hline \end{array}$	$\begin{array}{r} 4.15 \\ 3.64 \\ \hline \end{array}$	$\begin{array}{r} 5.61 \\ 2.08 \\ \hline \end{array}$	$\begin{array}{r} 4.68 \\ 5.12 \\ \hline \end{array}$
$\begin{array}{r} 3.2 \\ 3.4 \\ \hline \end{array}$	$\begin{array}{r} 5.3 \\ 4.5 \\ \hline \end{array}$	$\begin{array}{r} 1.14 \\ 2.12 \\ \hline \end{array}$	$\begin{array}{r} 2.06 \\ 5.13 \\ \hline \end{array}$	$\begin{array}{r} 2.25 \\ 6.35 \\ \hline \end{array}$

- DAVE'S DISTINGUISHED DECIMAL SUBTRACTION!

$\begin{array}{r} 0.3 \\ -0.1 \\ \hline \end{array}$	$\begin{array}{r} 0.9 \\ -0.6 \\ \hline \end{array}$	$\begin{array}{r} 0.8 \\ -0.7 \\ \hline \end{array}$	$\begin{array}{r} 3.8 \\ -2.6 \\ \hline \end{array}$	$\begin{array}{r} 9.8 \\ -5.4 \\ \hline \end{array}$
$\begin{array}{r} 0.87 \\ -0.42 \\ \hline \end{array}$	$\begin{array}{r} 0.77 \\ -0.15 \\ \hline \end{array}$	$\begin{array}{r} 0.83 \\ -0.51 \\ \hline \end{array}$	$\begin{array}{r} 2.57 \\ -1.41 \\ \hline \end{array}$	$\begin{array}{r} 4.68 \\ -3.41 \\ \hline \end{array}$
$\begin{array}{r} 6.53 \\ -3.53 \\ \hline \end{array}$	$\begin{array}{r} 7.4 \\ -0.4 \\ \hline \end{array}$	$\begin{array}{r} 6.5 \\ -0.9 \\ \hline \end{array}$	$\begin{array}{r} 8.2 \\ -0.6 \\ \hline \end{array}$	$\begin{array}{r} 10.6 \\ -2.7 \\ \hline \end{array}$

SOME POINTED OBJECTS!

A	$0.2 + 0.1$
P	$0.2 - 0.1$
N	$0.65 + 0.33$
L	$0.65 - 0.33$

L	$0.14 + 0.26$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$	$\begin{array}{r} .1 \\ \hline \end{array}$	$\begin{array}{r} .6 \\ \hline \end{array}$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .96 \\ \hline \end{array}$
E	$0.4 + 0.2$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .1 \\ \hline \end{array}$	$\begin{array}{r} .78 \\ \hline \end{array}$	$\begin{array}{r} .98 \\ \hline \end{array}$		
S	$0.4 - 0.2$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .4 \\ \hline \end{array}$	$\begin{array}{r} .32 \\ \hline \end{array}$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$
R	$0.87 + 0.09$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .4 \\ \hline \end{array}$	$\begin{array}{r} .32 \\ \hline \end{array}$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$
I	$0.87 - 0.09$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .4 \\ \hline \end{array}$	$\begin{array}{r} .32 \\ \hline \end{array}$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$	$\begin{array}{r} .2 \\ \hline \end{array}$
T	$0.48 + 0.32$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .98 \\ \hline \end{array}$	$\begin{array}{r} .3 \\ \hline \end{array}$	$\begin{array}{r} .78 \\ \hline \end{array}$	$\begin{array}{r} .32 \\ \hline \end{array}$	

DECIMAL ADDITION + (AND) SUBTRACTION



ADDITION

Rule: Keep the decimal points under each other.
No calculators for this page

1

0.2	0.6	1.4	6.5	2.1	7.4
$+ 0.7$	$+ 0.2$	$+ 2.3$	$+ 3.4$	$+ 3.8$	$+ 2.6$
_____	_____	_____	_____	_____	_____

2

4.4	3.7	4.5	7.1	5.2	6.6
$+ 7.3$	$+ 9.2$	$+ 6.4$	$+ 6.8$	$+ 5.5$	$+ 7.3$
_____	_____	_____	_____	_____	_____

3

3.7	2.5	4.3	7.7	6.4	4.8
$+ 2.4$	$+ 1.8$	$+ 2.9$	$+ 1.8$	$+ 2.0$	$+ 4.4$
_____	_____	_____	_____	_____	_____

4

4.6	3.7	6.6	5.8	3.4	7.9
$+ 5.6$	$+ 8.6$	$+ 5.8$	$+ 6.7$	$+ 9.8$	$+ 6.8$
_____	_____	_____	_____	_____	_____

SUBTRACTION

5

0.9	2.7	3.3	4.5	3.4
$- 0.4$	$- 1.4$	$- 2.1$	$- 2.3$	$- 1.1$
_____	_____	_____	_____	_____

6

4.3	3.2	2.7	4.1	3.4	6.2
$- 1.5$	$- 0.7$	$- 1.9$	$- 2.6$	$- 2.8$	$- 1.4$
_____	_____	_____	_____	_____	_____

7

19.3	17.2	15.1	16.7	18.3	12.1
$- 7.3$	$- 4.6$	$- 3.5$	$- 4.9$	$- 2.7$	$- 1.7$
_____	_____	_____	_____	_____	_____

8

34.2	14.5	27.1	29.4	32.1	16.5
$- 6.5$	$- 9.7$	$- 18.6$	$- 19.7$	$- 27.4$	$- 8.7$
_____	_____	_____	_____	_____	_____

9

136	224	148	141	278	164
$+ 125$	$+ 117$	$+ 123$	$+ 249$	$+ 115$	$+ 129$
_____	_____	_____	_____	_____	_____

10

153	192	234	211	251	222
$- 116$	$- 159$	$- 107$	$- 103$	$- 136$	$- 115$
_____	_____	_____	_____	_____	_____

DAVE'S DECIMALS



$$\begin{array}{r} 0.23 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 0.72 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 0.63 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 0.91 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 0.82 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 0.16 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 0.76 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 0.99 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 0.49 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 0.53 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 7.13 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4.21 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2.98 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3.68 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2.34 \\ \times 9 \\ \hline \end{array}$$

— WHAT DID THE DOG SAY WHEN IT SAT ON THE SANDPAPER?

X	4	.1	.02	.06	.9	8	.6	.3	.05
3	12	.3	.06	.18	2.7	24	1.8	.9	.15
.2	.8	.06	.04	.012	.18	1.6	12	.5	.7
.4	16	.04	.008	.024	3.6	32	24	.12	.02
.8	3.6	.08	.1	.048	.7	6.4	.5	.26	.04
.5	.4	.05	1	.03	4.5	4	.03	.15	.025
6	30	.6	12	.36	5.5	48	3.8	1.8	.3
2	1.2	.2	.4	.12	1.1	16	.8	.6	.1
.9	38	.09	1.8	54	8.1	7.2	5.4	.27	4.5

SHADE IN ALL THE MISTAKES TO FIND OUT!
(YOU SHOULD FIND 30 MISTAKES)



— COMPLETE THESE TABLES

X	20
10	
20	
50	
100	

X	16
10	
100	
200	
500	

X	22
5	
10	
20	
100	

X	18
100	
50	
10	
5	

X	27
20	
40	
80	
100	

X	35
10	
20	
30	
50	

Write a > or < to make each sentence true

10×35 300 20×17 350

15×100 155 40×80 320

5×43 200 10×82 700

5×16 50 100×5 490

10×12 150 20×12 300

100×6 60 15×20 350

— TONNES OF TENS —

$8.04 \times 10 =$

$0.84 \times 10 =$

$8.914 \times 100 =$

$0.894 \times 100 =$

$0.8 \times 100 =$

$9.765 \times 1000 =$

$0.97 \times 1000 =$

$8.04 \div 10 =$

$804 \div 10 =$

$0.84 \div 10 =$

$79.1 \div 100 =$

$7901 \div 100 =$

$980.1 \div 1000 =$

$9088 \div 1000 =$

$0.7 \div 1000 =$

WHY WERE THE STUDENT AND THE WITCH SMILING?

LINE UP EACH SUM WITH ITS CORRECT SOLUTION TO FIND THE ANSWER!

5.6×100 $0.56 \times 10\ 000$ $560 \div 10$ $5.6 \div 1000$ 56×1000 0.0056×10 $56\ 000 \div 10\ 000$ $56 \div 100$ $0.56 \times 1000\ 000$ 31.2×1000 $3.12 \div 100$ $0.00312 \div 10$ $3.12 \times 100\ 000$ 0.0312×100 $3120 \div 1000\ 000$ $31200 \div 1000$ $0.312 \times 10\ 000$ $3120 \div 10$		<ul style="list-style-type: none"> ◆ 5.6 ◆ 0.0056 ◆ 560 (THIS ONE IS DONE FOR YOU!) ◆ 3.12 ◆ 312 ◆ 5600 ◆ 0.000312 ◆ 0.00312 ◆ 0.056 ◆ 31200 ◆ 3120 ◆ 56 ◆ 0.56 ◆ 0.0312 ◆ 31.2 ◆ 312000 ◆ 56000 ◆ 560000
--	--	---

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
												E					

DID YOU? !

NOW WRITE THESE NUMBERS USING WORDS.

560 _____

3124 _____

87.9 _____

7002.8 _____

DAVE'S DECIMAL ALL-SORTS

DO-DA-CRAZY-DECIMAL DUDES!



2.06	1.87	9.58	8.72	16.85
$+ 7.18$	$+ 0.59$	$+ 7.69$	$- 3.14$	$- 11.58$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

3.5	5.3	4.2	2.4	1.6
$\times 2$	$\times 2$	$\times 3$	$\times 5$	$\times 5$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

$4 \overline{) 8.48}$	$6 \overline{) 6.72}$	$8 \overline{) 10.56}$	$10 \overline{) 39.7}$	$12 \overline{) 26.472}$
-----------------------	-----------------------	------------------------	------------------------	--------------------------

25.6	43.8	39.7	93.25	75.64
$- 17.4$	$- 27.9$	$- 32.8$	$+ 58.89$	$+ 38.36$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

NOW DO THESE SUMS TO DISCOVER A FAMOUS DECIMAL YEAR IN N.Z.!

Y $\$0.83$	V $\$1.38$	I $\$2.75$	X $\$3.41$
$+ 0.67$	$+ 0.62$	$- 1.35$	$- 2.76$
<hr/>	<hr/>	<hr/>	<hr/>

S $\$0.32$	T $\$1.25$	E $7 \overline{) 2.80}$	N $6 \overline{) 10.80}$
$\times 5$	$\times 4$		
<hr/>	<hr/>		

1.8 1.4 1.8 .4 5 .4 .4 1.8 1.6 1.4 .65 5 1.5 1.6 .4 2 .4 1.8

(WHY WAS IT SO IMPORTANT?)

DAVE'S DANGEROUS DECIMALS

DAVE SUGGESTS YOU USE A CALCULATOR



$$\begin{array}{r} 3619.57 \\ + 1248.68 \\ \hline \end{array}$$

$$\begin{array}{r} 3594.07 \\ + 1483.56 \\ \hline \end{array}$$

$$\begin{array}{r} 510.234 \\ + 667.981 \\ \hline \end{array}$$

$$\begin{array}{r} 148.675 \\ + 728.149 \\ \hline \end{array}$$

$$1959.63 + 812.54 + 70.26 + 3.19 = \underline{\hspace{2cm}}$$

$$\begin{array}{r} 42.65 \\ - 21.88 \\ \hline \end{array}$$

$$\begin{array}{r} 951.34 \\ - 240.25 \\ \hline \end{array}$$

$$\begin{array}{r} 73.589 \\ - 14.983 \\ \hline \end{array}$$

$$\begin{array}{r} 6.050 \\ - 1.123 \\ \hline \end{array}$$

$$1959.63 - 812.54 - 70.26 - 3.19 = \underline{\hspace{2cm}}$$

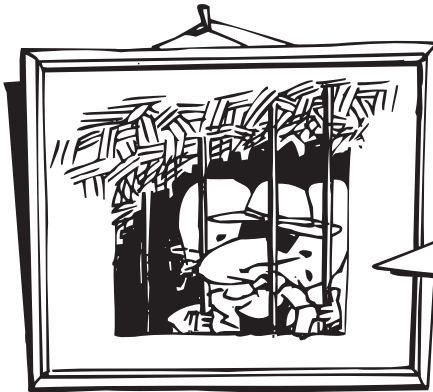
$$13 \overline{) 39.52}$$

$$20 \overline{) 86.420}$$

$$0.6 \overline{) 2.46}$$

$$1.5 \overline{) 607.65}$$

WHAT'S HAPPENED TO DAVE NOW?

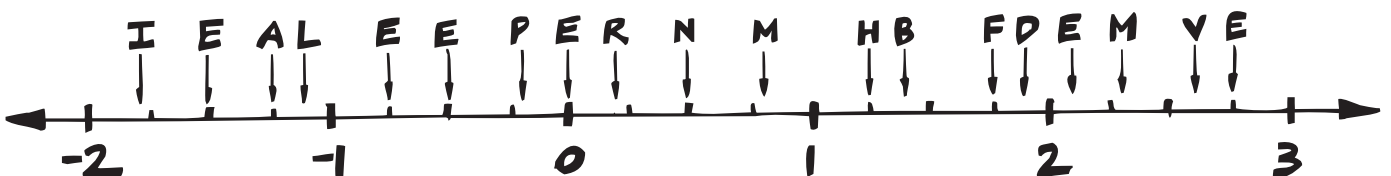


"

$$\begin{array}{r} \overline{1.25} \overline{2.75} \overline{-1} \overline{-0.2} \quad \overline{2.3} \overline{-0.75} \\ \overline{-1.8} \overline{2.6} \overline{0} \quad \overline{1.4} \overline{2.1} \overline{-1.5} \overline{0.5} \\ \overline{1.75} \overline{0.2} \overline{-1.25} \overline{0.8} \overline{-0.5} \overline{1.9} \end{array}$$

"

-HERE DWELLS DASTARDLY
DAVE DECIMAL, DOBBED IN FOR
DAMAGING CLASSIFIED DECIMALS.



MONEY MATHS

$$\begin{array}{r} \$0.38 \\ + 0.12 \\ \hline \end{array}$$

$$\begin{array}{r} \$0.94 \\ + 0.46 \\ \hline \end{array}$$

$$\begin{array}{r} \$0.75 \\ + 0.15 \\ \hline \end{array}$$

$$\begin{array}{r} \$0.92 \\ - 0.07 \\ \hline \end{array}$$

$$\begin{array}{r} \$0.44 \\ - 0.29 \\ \hline \end{array}$$

$$\begin{array}{r} \$2.76 \\ + 2.34 \\ \hline \end{array}$$

$$\begin{array}{r} \$1.79 \\ + 0.81 \\ \hline \end{array}$$

$$\begin{array}{r} \$4.36 \\ - 2.41 \\ \hline \end{array}$$

$$\begin{array}{r} \$7.10 \\ - 5.35 \\ \hline \end{array}$$

$$\begin{array}{r} \$8.26 \\ - 1.96 \\ \hline \end{array}$$

— FIND THE COST OF :

- | | |
|------------------------------|------------------------------|
| 4 MATS AT \$7.25 EACH _____ | 2 COTS AT \$82.95 EACH _____ |
| 6 HATS AT \$15.40 EACH _____ | 900 DOTS AT 30c EACH _____ |
| 10 RATS AT \$1.65 EACH _____ | 8 LOTS AT \$5420 EACH _____ |
| 3 BATS AT \$98.90 EACH _____ | 5 POTS AT \$48.50 EACH _____ |

— HOW MUCH CHANGE FROM :

- \$10 WHEN YOU SPEND \$6.80 _____
- \$10 WHEN YOU BUY 2 PENS AT \$1.35 EACH _____
- \$20 WHEN YOU SPEND \$11.30 _____
- \$20 WHEN YOU BUY 5 DISCS AT \$2.75 EACH _____
- \$50 WHEN YOU BUY 3 BOOKS AT \$1.40, \$1.60, \$1.80, 3 COVERS AT 70c EACH AND 4 FELT TIPS AT \$3.20 EACH. _____

$$\begin{array}{r} \$28.76 \\ + 10.79 \\ \hline \end{array}$$

$$\begin{array}{r} \$85.74 \\ + 23.46 \\ \hline \end{array}$$

$$\begin{array}{r} \$64.48 \\ - 16.88 \\ \hline \end{array}$$

$$\begin{array}{r} \$75.34 \\ - 32.99 \\ \hline \end{array}$$

$$\begin{array}{r} \$43.70 \\ - 29.90 \\ \hline \end{array}$$

ANSWER TO THE NEAREST DOLLAR

$$\$3.20 + \$4.60 \approx \underline{\hspace{2cm}} \quad \$7.35 + \$5.05 \approx \underline{\hspace{2cm}}$$

$$\$2.85 + \$1.20 \approx \underline{\hspace{2cm}} \quad \$2.90 + \$2.80 \approx \underline{\hspace{2cm}}$$

$$\$9.60 - \$8.75 \approx \underline{\hspace{2cm}} \quad \$6.25 - \$3.95 \approx \underline{\hspace{2cm}}$$

$$\$24.35 - \$12.50 \approx \underline{\hspace{2cm}} \quad \$17.80 - \$9.20 \approx \underline{\hspace{2cm}}$$

(MULTIPLYING DECIMALS)

Rule: Count how many decimal places.

The answer must have that many places

Find the answers
(calculators optional)

EXAMPLES

$$4.2 \times 3 = 12.6$$

1 decimal place

$$2.4 \times 1.2 = 2.88$$

2 decimal places

$$2.14 \times 2 = 4.28$$

2 decimal places

$$3.11 \times 0.5 = 1.555$$

3 decimal places

1

$$\begin{array}{r} 3.2 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 4.1 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 5.4 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2.1 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4.4 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3.2 \\ \times 4 \\ \hline \end{array}$$

2

$$\begin{array}{r} 4.2 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3.3 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6.4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5.5 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 4.2 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9.3 \\ \times 5 \\ \hline \end{array}$$

3

$$\begin{array}{r} 2.7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4.6 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9.3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5.7 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3.9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 0.4 \\ \times 7 \\ \hline \end{array}$$

4

$$\begin{array}{r} 6.1 \\ \times 0.5 \\ \hline \end{array}$$

$$\begin{array}{r} 3.7 \\ \times 0.2 \\ \hline \end{array}$$

$$\begin{array}{r} 4.4 \\ \times 0.3 \\ \hline \end{array}$$

$$\begin{array}{r} 6.2 \\ \times 0.5 \\ \hline \end{array}$$

$$\begin{array}{r} 5.3 \\ \times 1.6 \\ \hline \end{array}$$

$$\begin{array}{r} 4.4 \\ \times 1.3 \\ \hline \end{array}$$

5

$$\begin{array}{r} 35.6 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 17.21 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 16.22 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5.21 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6.71 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 13.21 \\ \times 5 \\ \hline \end{array}$$

6

$$\begin{array}{r} 16.6 \\ \times 2.2 \\ \hline \end{array}$$

$$\begin{array}{r} 14.5 \\ \times 3.7 \\ \hline \end{array}$$

$$\begin{array}{r} 4.9 \\ \times 2.3 \\ \hline \end{array}$$

$$\begin{array}{r} 5.4 \\ \times 1.7 \\ \hline \end{array}$$

$$\begin{array}{r} 6.2 \\ \times 3.5 \\ \hline \end{array}$$

$$\begin{array}{r} 7.0 \\ \times 4.4 \\ \hline \end{array}$$

Now use your calculator



$$\begin{array}{r} 0.607 \\ \times 0.5 \\ \hline \end{array}$$

$$\begin{array}{r} 4.71 \\ \times 6.45 \\ \hline \end{array}$$

$$\begin{array}{r} 3.78 \\ \times 2.11 \\ \hline \end{array}$$

$$\begin{array}{r} 6.55 \\ \times 3.07 \\ \hline \end{array}$$

$$\begin{array}{r} 5.23 \\ \times 9.58 \\ \hline \end{array}$$

$$19 \times 34.785 =$$

$$24 \times 16.217 =$$

$$16.5 \times 18 =$$

$$27.5 \times 13.9 =$$

$$147 \times 2.615 =$$

$$19.8 \times 15.27 =$$

÷ DIVISION

REVISION

No calculators for this page

EXAMPLES $9.7 \times 10 = 97$ $58.119 \times 100 = 5811.9$

$6.4 \times 10 =$ _____	$12.7 \times 10 =$ _____
$3.24 \times 10 =$ _____	$5.771 \times 10 =$ _____
$0.0514 \times 100 =$ _____	$6.0892 \times 100 =$ _____
$9.2 \times 100 =$ _____	$0.6 \times 1000 =$ _____
$0.0957 \times 1000 =$ _____	$87.24 \times 1000 =$ _____

DIVIDING DECIMALS BY 10, 100 & 1000

Rule: Move the decimal
point to the left

EXAMPLES $627 \div 10 = 62.7$ $582 \div 100 = 5.82$

$3.4 \div 10 =$ _____	$2.7 \div 10 =$ _____
$0.55 \div 10 =$ _____	$12.23 \div 10 =$ _____
$16.3 \div 100 =$ _____	$34.88 \div 100 =$ _____
$410 \div 100 =$ _____	$79 \div 1000 =$ _____
$548.1 \div 1000 =$ _____	$736.63 \div 1000 =$ _____

IT'S TIME TO
BEAT THE CALCULATOR!

DIVIDE INTO 2 GROUPS

THE FIRST
GROUP USES THE
CALCULATOR!

THE OTHER
GROUP DOES
THE QUESTIONS
MENTALLY

WHO
WILL
FINISH
FIRST

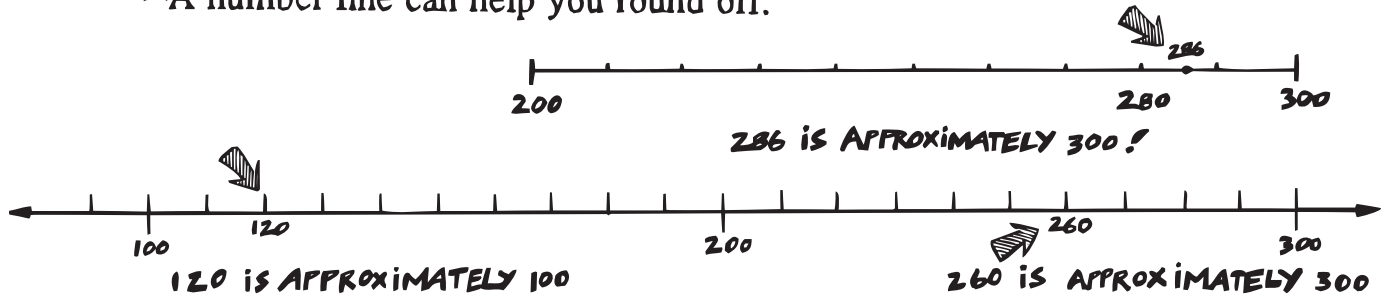
START NOW!

$64 \times 10 =$ _____	$12.6 \times 10 =$ _____
$9.65 \times 100 =$ _____	$0.543 \times 100 =$ _____
$2.7 \times 10 =$ _____	$8.421 \times 1000 =$ _____

-ROUNDING OFF!



-A number line can help you round off.



Round off these numbers to the nearest 100.

330	_____	690	_____	407	_____	85	_____
117	_____	263	_____	470	_____	905	_____
140	_____	158	_____	499	_____	50	_____

Round off these numbers to the nearest 10.

87	_____	42	_____	144	_____	236	_____
24	_____	16	_____	391	_____	246	_____
329	_____	465	_____	198	_____	372	_____

Round off these decimals to the nearest whole number.

80.6	_____	47.2	_____	6.6	_____	15.1	_____
12.7	_____	18.55	_____	27.31	_____	14.2	_____
19.7	_____	8.6	_____	15.5	_____	14.49	_____

Rounding to the nearest 100.

Circle all those numbers that would round off to 400.
Underline all those numbers that would round off to 500.

496	460	370	407
546	450	531	355

GET INTO GEAR FOR SOME... ...RACEWAY MATHS!

$\begin{array}{r} 123 \\ 243 \\ \hline 115 \end{array}$	$\begin{array}{r} 65 \\ 373 \\ \hline 400 \end{array}$	$\begin{array}{r} 273 \\ 647 \\ \hline 189 \end{array}$	$\begin{array}{r} 463 \\ 840 \\ \hline 406 \end{array}$	$\begin{array}{r} 413 \\ 909 \\ \hline 286 \end{array}$
---	--	---	---	---

$\begin{array}{r} 342 \\ 153 \\ 265 \\ \hline 104 \end{array}$	$\begin{array}{r} 212 \\ 567 \\ 658 \\ \hline 896 \end{array}$	$\begin{array}{r} 119 \\ 400 \\ 589 \\ \hline 779 \end{array}$	$\begin{array}{r} 313 \\ 694 \\ 507 \\ \hline 899 \end{array}$	$\begin{array}{r} 511 \\ 143 \\ 349 \\ \hline 97 \end{array}$
--	--	--	--	---

$\begin{array}{r} 322 \\ -115 \\ \hline \end{array}$	$\begin{array}{r} 420 \\ -240 \\ \hline \end{array}$	$\begin{array}{r} 243 \\ -144 \\ \hline \end{array}$	$\begin{array}{r} 463 \\ -265 \\ \hline \end{array}$	$\begin{array}{r} 342 \\ -258 \\ \hline \end{array}$
--	--	--	--	--

$\begin{array}{r} 524 \\ -236 \\ \hline \end{array}$	$\begin{array}{r} 637 \\ -548 \\ \hline \end{array}$	$\begin{array}{r} 505 \\ -377 \\ \hline \end{array}$	$\begin{array}{r} 705 \\ -248 \\ \hline \end{array}$	$\begin{array}{r} 243 \\ -67 \\ \hline \end{array}$
--	--	--	--	---

$\begin{array}{r} 23 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 55 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 44 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 22 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 45 \\ \times 5 \\ \hline \end{array}$
---	---	---	---	---	---

$2 \overline{)158}$	$3 \overline{)354}$	$4 \overline{)620}$	$5 \overline{)335}$	$6 \overline{)4866}$	$7 \overline{)6370}$
$10 \overline{)9900}$	$9 \overline{)8181}$	$8 \overline{)8808}$	$7 \overline{)3283}$	$6 \overline{)76542}$	

— DO-DA-CRAZY
DECIMAL
SQUARES!

+	2.9	7.2	10.5	x	0.2	0.9	1.2
0.3				6			
0.8				0.1			
1.6				0.5			

“SOMETIMES ACCURACY IS BETTER THAN SPEED!”
DID YOU GET THE COURSE RECORD?

SQUARES

5^2 reads "five squared"

Mathematically it means 5×5 , which equals 25

Find the squares of these numbers



$$2^2 = \underline{\quad}$$

$$5^2 = \underline{\quad}$$

$$7^2 = \underline{\quad}$$

$$4^2 = \underline{\quad}$$

$$8^2 = \underline{\quad}$$

$$10^2 = \underline{\quad}$$

$$7^2 = \underline{\quad}$$

$$6^2 = \underline{\quad}$$

$$13^2 = \underline{\quad}$$

$$3^2 = \underline{\quad}$$

$$1^2 = \underline{\quad}$$

$$15^2 = \underline{\quad}$$

Now answer the questions and write each answer in the correct square.

If you have all the answers correct you will have a MAGIC square!

1. $3^2 - 3 = \underline{\quad}$	6. $4^2 - 13 = \underline{\quad}$	<table border="1" style="border-style: dashed; border-width: 2px;"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td></tr> </table>	1	2	3	4	5	6	7	8	9
1	2		3								
4	5		6								
7	8		9								
2. $1^2 = \underline{\quad}$	7. $6^2 \div 18 = \underline{\quad}$										
3. $2^2 + 2^2 = \underline{\quad}$	8. $5^2 - 4^2 = \underline{\quad}$										
4. $1^2 + 6 = \underline{\quad}$	9. $2^2 \div 1^2 = \underline{\quad}$										
5. $30 - 5^2 = \underline{\quad}$											

You use squares to find the square root of a number.

$$\sqrt{25} = 5 \text{ because } 5 \times 5 = 25$$

Find the square root of these numbers.

$$\sqrt{49} = \underline{\quad}$$

$$\sqrt{64} = \underline{\quad}$$

$$\sqrt{81} = \underline{\quad}$$

$$\sqrt{16} = \underline{\quad}$$

$$\sqrt{144} = \underline{\quad}$$

$$\sqrt{4} = \underline{\quad}$$

$$\sqrt{25} = \underline{\quad}$$

$$\sqrt{9} = \underline{\quad}$$

$$\sqrt{100} = \underline{\quad}$$

$$\sqrt{36} = \underline{\quad}$$

$$\sqrt{1} = \underline{\quad}$$

$$\sqrt{169} = \underline{\quad}$$

Answer each question and write the answer in the correct square.

You should have another magic square!

1 $\sqrt{36} + \sqrt{16} = \underline{\quad}$	6 $\sqrt{81} + 2^2 = \underline{\quad}$	11 $5^2 - \sqrt{81} = \underline{\quad}$	<table border="1" style="border-style: dashed; border-width: 2px;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td></td><td></td><td></td><td>19</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				19
1	2	3		4																			
5	6	7		8																			
9	10	11		12																			
13	14	15		16																			
			19																				
2 $\sqrt{25} + 10 = \underline{\quad}$	7 $5^2 - \sqrt{64} = \underline{\quad}$	12 $\sqrt{144} - \sqrt{9} = \underline{\quad}$																					
3 $6^2 - 5^2 = \underline{\quad}$	8 $\sqrt{64} = \underline{\quad}$	13 $\sqrt{36} + 1 = \underline{\quad}$																					
4 $\sqrt{121} + \sqrt{121} = \underline{\quad}$	9 $\sqrt{49} \times 3 = \underline{\quad}$	14 $\sqrt{100} + 2^2 + 4 = \underline{\quad}$																					
5 $\sqrt{25} \times 4 = \underline{\quad}$	10 $4^2 - 2^2 = \underline{\quad}$	15 $8^2 - 7^2 - 1^2 = \underline{\quad}$																					

... WHAT DID MARG SAY TO PEPPA?



BY COMPLETING THE TABLES BELOW AND THEN DOING THE SUMS, YOU'LL FIND OUT!

NUMBER	1	2	5	6	8	9	12	13	15	16	20	25
SQUARE												

NUMBER	4	9	16	49	100	121	196	1000000
SQUARE ROOT								

A $3^2 + 5 = \underline{\quad}$

I $\sqrt{36} + 10 = \underline{\quad}$

C $2 + 4^2 = \underline{\quad}$

L $6 + \sqrt{81} = \underline{\quad}$

D $7^2 - 29 = \underline{\quad}$

N $\sqrt{144} - 1 = \underline{\quad}$

E $124 - 10^2 = \underline{\quad}$

O $17 - \sqrt{25} = \underline{\quad}$

F $11^2 - 95 = \underline{\quad}$

R $\sqrt{400} - \sqrt{9} = \underline{\quad}$

G $2^2 + 3^2 = \underline{\quad}$

S $\sqrt{144} + 3^2 = \underline{\quad}$

Y $5^2 - 6 = \underline{\quad}$

M $\sqrt{49} + \sqrt{9} = \underline{\quad}$

“

15 16 26 24 16 11 10 19 26 17 16 20 13 24 16 21

17 24 14 15 18 12 12 15 !”



THE ANSWERS

THE MIGHTY MATHS BLACKBELT

ADDITION 1

Add 3 to each number +3									
3	5	8	1	9	4	10	2	15	7
6	8	11	4	12	7	13	5	18	10

Add 8 to each number +8									
1	5	6	9	2	0	8	3	13	4
9	13	14	17	10	8	16	11	21	12

Add 4 to each number +4									
3	1	5	9	12	7	0	4	6	2
7	5	9	13	16	11	4	8	10	6

Add 6 to each number +6									
6	2	0	9	1	14	5	3	7	4
12	8	6	15	7	20	11	9	13	10

Add 9 to each number +9									
6	7	1	3	9	20	2	5	0	4
15	16	10	12	18	29	11	14	9	13

THE MIGHTY MATHS BLACKBELT

ADDITION 2

Add 7 to each number +7									
14	19	17	15	12	10	9	13	16	23
21	26	24	22	19	17	16	20	23	30

Add 12 to each number +12									
12	9	8	11	14	3	7	10	6	0
24	21	20	23	26	15	19	22	18	12

Add 3 to each number +3									
15	19	18	11	9	4	10	2	15	17
18	22	21	14	12	7	13	5	18	20

Add 5 to each number +5									
22	10	17	15	19	14	11	13	18	0
27	15	22	20	24	19	16	18	23	5

Add 8 to each number +8									
11	15	16	19	12	0	18	13	14	32
19	23	24	27	20	8	26	21	22	40

Add 4 to each number +4									
13	11	15	19	22	17	10	14	16	12
17	15	19	23	26	21	14	18	20	16

SUBTRACTION 1

Subtract 2 from each number **-2**

16	12	10	19	11	24	15	13	17	14
14	10	8	17	9	22	13	11	15	12

Subtract 5 from each number **-5**

16	17	11	13	19	22	12	15	10	14
11	12	6	8	14	17	7	10	5	9

Subtract 3 from each number **-3**

3	5	8	10	9	4	10	12	15	7
0	2	5	7	6	1	7	9	12	4

Subtract 6 from each number **-6**

12	10	9	6	7	14	11	23	13	20
6	4	3	0	1	8	5	17	7	14

Subtract 4 from each number **-4**

11	5	6	9	12	10	8	15	13	4
7	1	2	5	8	6	4	11	9	0

Subtract 7 from each number **-7**

13	11	15	9	12	7	10	14	16	8
6	4	8	2	5	0	3	7	9	1

SUBTRACTION 2

Subtract 6 from each number **-6**

6	12	10	19	11	14	15	13	7	8
0	6	4	13	5	8	9	7	1	2

Subtract 9 from each number **-9**

16	17	11	13	9	20	12	15	10	14
7	8	2	4	0	11	3	6	1	5

Subtract 7 from each number **-7**

14	19	17	15	12	10	9	13	16	23
7	12	10	8	5	3	2	6	9	16

Subtract 12 from each number **-12**

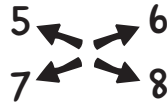
12	19	18	13	14	23	17	20	16	15
0	7	6	1	2	11	5	8	4	3

Subtract 3 from each number **-3**

15	19	18	11	9	4	10	12	15	17
12	16	15	8	6	1	7	9	12	14

Subtract 5 from each number **-5**

22	10	17	15	17	14	11	13	18	10
17	5	12	10	12	9	6	8	13	5



MULTIPLICATION 1

Multiply each number by 4 **×4**

1	5	6	9	2	0	8	3	4	7
4	20	24	36	8	0	32	12	16	28

Multiply each number by 6 **×6**

3	1	5	9	2	7	10	4	6	8
18	6	30	54	12	42	60	24	36	48

Multiply each number by 3 **×3**

6	2	0	9	1	4	5	3	7	12
18	6	0	27	3	12	15	9	21	36

Multiply each number by 5 **×5**

6	7	1	3	9	2	8	5	0	4
30	35	5	15	45	10	40	25	0	20

Multiply each number by 7 **×7**

3	5	8	1	9	4	10	2	6	7
21	35	56	7	63	28	70	14	42	49

Multiply each number by 2 **×2**

2	10	9	5	7	4	1	3	13	0
4	20	18	10	14	8	2	6	26	0

MULTIPLICATION 2

Multiply each number by 8 **×8**

1	5	6	9	2	0	8	3	13	4
8	40	48	72	16	0	64	24	104	32

Multiply each number by 6 **×6**

3	1	5	9	12	7	0	4	6	2
18	6	30	54	72	42	0	24	36	12

Multiply each number by 4 **×4**

6	2	0	9	1	14	5	3	7	4
24	8	0	36	4	56	20	12	28	16

Multiply each number by 7 **×7**

6	7	1	3	9	2	12	5	0	4
42	49	7	21	63	14	84	35	0	28

Multiply each number by 5 **×5**

3	5	8	1	9	4	10	2	12	7
15	25	40	5	45	20	50	10	60	35

Multiply each number by 3 **×3**

2	10	9	5	7	4	1	3	13	0
6	30	27	15	21	12	3	9	39	0

Divide each number by 2 $\div 2$

14	18	10	6	12	20	36	8	16	22
7	9	5	3	6	10	18	4	8	11

Divide each number by 8 $\div 8$

16	88	8	24	40	32	64	48	80	96
2	11	1	3	5	4	8	6	10	12

Divide each number by 3 $\div 3$

15	39	18	12	9	24	33	21	30	27
5	13	6	4	3	8	11	7	10	9

Divide each number by 5 $\div 5$

20	10	15	35	50	5	45	55	30	60
4	2	3	7	10	1	9	11	6	12

Divide each number by 8 $\div 8$

16	8	40	24	72	48	88	32	80	56
2	1	5	3	9	6	11	4	10	7

Divide each number by 4 $\div 4$

40	4	24	36	16	44	8	28	32	20
10	1	6	9	4	11	2	7	8	5

Divide each number by 3 $\div 3$

3	9	27	12	15	6	18	24	21	30
1	3	9	4	5	2	6	8	7	10

Divide each number by 5 $\div 5$

20	10	15	25	5	40	50	30	45	55
4	2	3	5	1	8	10	6	9	11

Divide each number by 7 $\div 7$

14	56	7	28	21	70	49	35	42	84
2	8	1	4	3	10	7	5	6	12

Divide each number by 4 $\div 4$

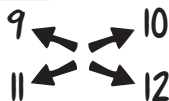
32	12	16	4	20	8	24	36	40	44
8	3	4	1	5	2	6	9	10	11

Divide each number by 6 $\div 6$

6	12	24	36	18	42	66	30	48	54
1	2	4	6	3	7	11	5	8	9

Divide each number by 9 $\div 9$

90	9	27	36	99	18	45	72	54	63
10	1	3	4	11	2	5	8	6	7



- FRACTIONS -

- A FRACTION IS A PART OF SOMETHING!!

HERE'S AN EXAMPLE



The square is divided into 4 parts. One is shaded. Therefore $\frac{1}{4}$ is shaded.

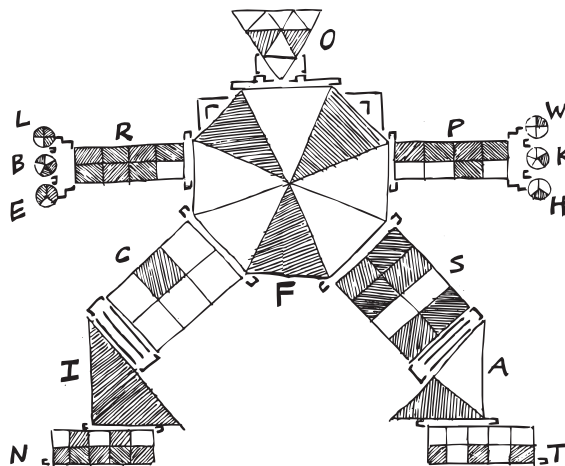
In the circle beside each shape, write the fraction of the shape that is shaded.

10 shapes with circles containing fractions next to them:

- Rectangle: $\frac{1}{2}$
- Rectangle: $\frac{2}{5}$
- Rectangle: $\frac{5}{16}$
- Rectangle: $\frac{1}{3}$
- Circle: $\frac{1}{2}$
- Rectangle: $\frac{9}{16}$
- Triangle: $\frac{2}{3}$
- Triangle: $\frac{3}{4}$
- Circle: $\frac{3}{8}$
- Circle: $\frac{3}{4}$
- Circle: $\frac{1}{3}$
- Triangle: $\frac{2}{4}$
- Triangle: $\frac{1}{3}$
- Circle: $\frac{14}{100}$
- Triangle: $\frac{2}{4}$ or $\frac{1}{2}$
- Triangle: $\frac{1}{5}$
- Grid: $\frac{1}{5}$

FRACTION-MAN

How much is shaded? Write the letter from each body part above the corresponding fraction.



A FRACTION IS A CHIP
 $\frac{1}{2}$ $\frac{3}{8}$ $\frac{7}{8}$ $\frac{1}{2}$ $\frac{1}{6}$ $\frac{3}{10}$ $\frac{2}{7}$ $\frac{7}{10}$ $\frac{1}{8}$ $\frac{1}{2}$ $\frac{1}{6}$ $\frac{1}{3}$ $\frac{1}{5}$

OFF THE WHOLE BLOCK
 $\frac{2}{9}$ $\frac{3}{8}$ $\frac{3}{10}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{2}{9}$ $\frac{2}{4}$ $\frac{3}{5}$ $\frac{3}{4}$ $\frac{2}{9}$ $\frac{1}{5}$

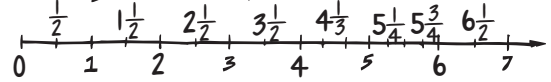


-NOW SHADE IN THESE SHAPES TO SHOW EACH FRACTION!

$\frac{1}{4}$ 	$\frac{1}{2}$ 	$\frac{2}{3}$ 	$\frac{1}{3}$
$\frac{3}{4}$ 	$\frac{4}{5}$ 	$\frac{7}{8}$ 	$\frac{1}{4}$
$\frac{1}{2}$ 	$\frac{1}{4}$ 	$\frac{2}{3}$ 	$\frac{1}{2}$
$\frac{5}{5}$ 	$\frac{3}{8}$ 	$\frac{2}{5}$ 	$\frac{5}{6}$

"COME FIND MY PLACE!"

START BY WRITING THE MISSING NUMBERS AND FRACTIONS IN THE BOXES ON THE LINE!



HERE ARE SOME PAIRS OF LETTERS AND NUMBERS. WRITE EACH LETTER ABOVE THE NUMBER LINE AT ITS CORRECT POSITION AND A SPECIAL MESSAGE WILL APPEAR!

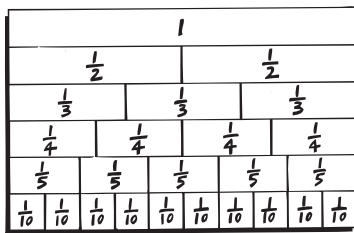
- | | | | |
|-------------------|-------------------|------------------|------------------|
| A 5 | M $-2\frac{1}{2}$ | U $\frac{1}{2}$ | C $4\frac{1}{2}$ |
| S $2\frac{1}{2}$ | E $7\frac{1}{10}$ | L $6\frac{5}{8}$ | S 1 |
| M $3\frac{1}{4}$ | S $5\frac{3}{5}$ | E $1\frac{1}{4}$ | I $2\frac{1}{4}$ |
| O $\frac{1}{5}$ | T 6 | Y -2 | H $-\frac{1}{2}$ |
| Y $3\frac{7}{10}$ | | | |

MY HOUSE IS MY CASTLE

NOW COMPLETE THE CLOCKS IN THE CLOCK-CREATURE BELOW!

13 ← → 14
15 ← → 16

-FURTHER FRACTIONS!



-EQUIVALENT FRACTIONS are fractions that are the same.

$\frac{2}{4}$ is the same as $\frac{1}{2}$ and $\frac{5}{10}$!

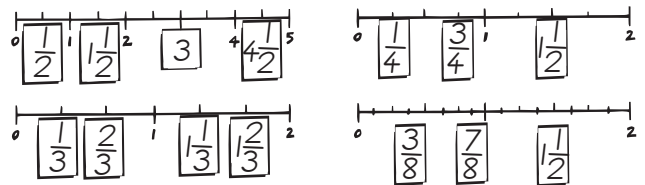
Using the diagrams, write down the equivalent fractions.
The first one is done for you!

	$\frac{1}{2} = \frac{2}{4}$
	$\frac{1}{5} = \frac{2}{10}$
	$\frac{1}{2} = \frac{5}{10}$
	$\frac{3}{5} = \frac{6}{10}$
	$\frac{4}{3} = \frac{3}{3}$

Now use a <, > or = between each fraction.

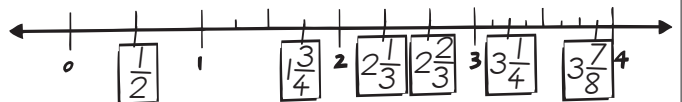
1 $\frac{1}{3} < \frac{1}{2}$ $\frac{2}{3} < \frac{8}{10}$ $\frac{2}{3} < \frac{9}{10}$	2 $\frac{1}{10} < \frac{1}{5}$ $\frac{4}{5} > \frac{3}{4}$ $\frac{3}{4} > \frac{5}{10}$	3 $\frac{1}{5} < \frac{1}{4}$ $\frac{1}{2} = \frac{5}{10}$ $\frac{3}{5} < \frac{2}{3}$	4 $\frac{1}{2} > \frac{2}{5}$ $\frac{3}{5} < \frac{3}{4}$ $1 > \frac{9}{10}$
--	--	---	---

Fill in the boxes with the correct numbers.

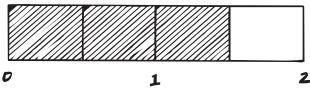


Fill in the boxes.

$\frac{4}{10} = \frac{2}{5}$	$\frac{6}{8} = \frac{3}{4}$	$\frac{5}{10} = \frac{1}{2}$	$\frac{2}{6} = \frac{1}{3}$
$\frac{8}{10} = \frac{4}{5}$	$\frac{4}{8} = \frac{1}{2}$	$\frac{3}{4} = \frac{9}{12}$	$\frac{3}{5} = \frac{12}{20}$
$\frac{1}{2} = \frac{20}{40}$	$\frac{7}{10} = \frac{14}{20}$	$\frac{4}{4} = \frac{1}{1}$	$\frac{6}{8} = \frac{3}{4}$



-HOW DO YOU CHANGE $1\frac{1}{2}$ INTO A FRACTION?



There are 3 lots of $\frac{1}{2}$ in $1\frac{1}{2}$ so $1\frac{1}{2}$ into a fraction = $\frac{3}{2}$

Now write these as fractions.

$1\frac{1}{4} = \frac{5}{4}$	$1\frac{2}{3} = \frac{5}{3}$	$1\frac{3}{5} = \frac{8}{5}$
$2\frac{1}{2} = \frac{5}{2}$	$1\frac{3}{4} = \frac{7}{4}$	$2\frac{1}{10} = \frac{21}{10}$

Write these fractions as mixed numbers.

$\frac{7}{4} = 1\frac{3}{4}$	$\frac{7}{3} = 2\frac{1}{3}$	$\frac{13}{10} = 1\frac{3}{10}$
$\frac{10}{3} = 3\frac{1}{3}$	$\frac{5}{2} = 2\frac{1}{2}$	$\frac{12}{5} = 2\frac{2}{5}$

-EQUIVALENT FRACTIONS

Equivalent fractions are fractions that are the same.

Here are some equivalent fractions for $\frac{3}{4}$ E = $\{\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}\}$

Fill in the gaps to find the equivalent fractions.

$\frac{1}{2} = \{\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \frac{6}{12}, \frac{7}{14}\}$
$\frac{1}{3} = \{\frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}, \frac{6}{18}\}$
$\frac{1}{4} = \{\frac{2}{8}, \frac{3}{12}, \frac{4}{16}\}$
$\frac{1}{5} = \{\frac{2}{10}, \frac{3}{15}, \frac{4}{20}, \frac{20}{100}, \frac{100}{500}, \frac{200}{1000}\}$
$\frac{1}{6} = \{\frac{2}{12}, \frac{3}{18}, \frac{4}{24}, \frac{5}{30}, \frac{6}{36}\}$

-FAMILIES OF FRACTIONS

FILL IN THE GAPS TO MAKE SOME EQUIVALENT FRACTIONS!

$\frac{1}{3} = \frac{2}{6}$	$\frac{1}{4} = \frac{3}{12}$	$\frac{7}{10} = \frac{14}{20}$	$\frac{1}{5} = \frac{3}{15}$	$\frac{3}{4} = \frac{30}{40}$
$\frac{2}{3} = \frac{6}{9}$	$\frac{4}{5} = \frac{16}{20}$	$\frac{3}{8} = \frac{15}{40}$	$\frac{12}{16} = \frac{3}{4}$	$\frac{2}{8} = \frac{1}{4}$
$\frac{8}{12} = \frac{2}{3}$	$\frac{10}{16} = \frac{5}{8}$	$\frac{25}{30} = \frac{5}{6}$	$\frac{9}{18} = \frac{1}{2}$	$\frac{21}{30} = \frac{7}{10}$
$\frac{1}{2} = \frac{3}{6} = \frac{10}{20} = \frac{12}{24}$	$\frac{3}{4} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20}$			
$\frac{8}{10} = \frac{4}{5} = \frac{16}{20} = \frac{32}{40}$	$\frac{5}{8} = \frac{10}{16} = \frac{15}{24} = \frac{25}{40}$			

-NOW SIMPLIFY THESE FRACTIONS TO MAKE THEM AS SMALL AS YOU CAN!

$\frac{6}{10} = \frac{3}{5}$	$\frac{14}{28} = \frac{1}{2}$	$\frac{20}{35} = \frac{4}{7}$	$\frac{21}{24} = \frac{7}{8}$	$\frac{12}{48} = \frac{1}{4}$
------------------------------	-------------------------------	-------------------------------	-------------------------------	-------------------------------

SHADE IN EACH BOX WHICH CONTAINS A FRACTION THAT IS EQUIVALENT TO THE FRACTION AT THE BOTTOM OF THAT COLUMN!

		$\frac{10}{30}$		$\frac{15}{36}$	
$\frac{7}{15}$	$\frac{20}{90}$	$\frac{8}{11}$	$\frac{25}{36}$	$\frac{2}{7}$	$\frac{18}{22}$
$\frac{5}{18}$	$\frac{9}{40}$	$\frac{5}{12}$	$\frac{30}{30}$	$\frac{21}{60}$	
$\frac{8}{20}$	$\frac{21}{50}$	$\frac{1}{22}$		$\frac{9}{16}$	$\frac{9}{15}$
$\frac{3}{12}$	$\frac{1}{6}$	$\frac{16}{50}$	$\frac{7}{16}$	$\frac{4}{7}$	$\frac{30}{42}$
		$\frac{8}{18}$		$\frac{3}{9}$	
$\frac{10}{28}$	$\frac{6}{15}$	$\frac{9}{14}$	$\frac{30}{40}$	$\frac{20}{50}$	$\frac{24}{36}$
$\frac{5}{11}$	$\frac{5}{12}$	$\frac{1}{3}$		$\frac{12}{30}$	$\frac{12}{20}$
$\frac{4}{16}$	$\frac{10}{30}$	$\frac{1}{4}$	$\frac{20}{30}$	$\frac{14}{21}$	$\frac{5}{8}$
		$\frac{2}{3}$		$\frac{15}{25}$	$\frac{6}{15}$
$\frac{1}{3}$	$\frac{2}{7}$	$\frac{3}{10}$	$\frac{6}{11}$	$\frac{2}{5}$	$\frac{5}{6}$
		$\frac{1}{4}$	$\frac{1}{2}$	$\frac{4}{7}$	$\frac{3}{4}$
				$\frac{7}{9}$	



17 ← → 18
19 ← → 20

HALVE IT... AND YOU HAVE IT!



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

NOW ARE YOU READY FOR THESE...?

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$	$\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$	$\frac{3}{7} + \frac{3}{7} = \frac{6}{7}$
$\frac{2}{7} + \frac{4}{7} = \frac{6}{7}$	$\frac{4}{9} + \frac{4}{9} = \frac{8}{9}$	$\frac{4}{11} + \frac{6}{11} = \frac{10}{11}$
$\frac{13}{15} - \frac{6}{15} = \frac{7}{15}$	$\frac{6}{11} - \frac{2}{11} = \frac{4}{11}$	$\frac{10}{13} - \frac{5}{13} = \frac{5}{13}$
$\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$	$\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$	$\frac{6}{10} + \frac{3}{10} = \frac{9}{10}$
$\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$	$\frac{4}{6} - \frac{1}{6} = \frac{3}{6}$	$\frac{6}{10} - \frac{3}{10} = \frac{3}{10}$
$\frac{6}{13} + \frac{4}{13} = \frac{10}{13}$	$\frac{8}{13} + \frac{5}{13} = \frac{13}{13}$	$\frac{4}{13} - \frac{4}{13} = 0$

WHO'S PART OF OUR TEAM?

T H E **H A L F** **B A C K!**
 $\frac{1}{4} \frac{1}{4} \frac{1}{4}$ $\frac{1}{4} \frac{1}{4} \frac{1}{4} \frac{1}{4}$ $\frac{1}{4} \frac{1}{4} \frac{1}{4} \frac{1}{4}$

F = $\frac{4}{4} - \frac{1}{4}$	T = $\frac{1}{4} + \frac{1}{4}$	C = $\frac{2}{5} + \frac{2}{5}$
K = $\frac{7}{9} - \frac{3}{9}$	E = $\frac{4}{9} - \frac{5}{9}$	L = $\frac{2}{9} + \frac{3}{9}$
H = $\frac{3}{9} + \frac{1}{9}$	B = $\frac{5}{9} + \frac{3}{9}$	A = $\frac{8}{9} - \frac{3}{9}$

-ADDING AND SUBTRACTING FRACTIONS!

Each fraction must have the same bottom line. Try these. The first two are done for you!

$\frac{1}{5} + \frac{1}{5} = \frac{2}{5}$	$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$	$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$	$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$
$\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$	$\frac{1}{7} + \frac{2}{7} = \frac{3}{7}$	$\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$	$\frac{3}{10} + \frac{6}{10} = \frac{9}{10}$
$\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$	$\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$	$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$	$\frac{4}{10} - \frac{3}{10} = \frac{1}{10}$
$\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$	$\frac{9}{10} - \frac{6}{10} = \frac{3}{10}$	$\frac{2}{2} - \frac{1}{2} = \frac{1}{2}$	$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$

These examples need two steps.

$\frac{2}{4} + \frac{4}{4} = \frac{6}{4} = 1\frac{2}{4}$	$\frac{2}{3} + \frac{3}{3} = \frac{5}{3} = 1\frac{2}{3}$	$\frac{4}{5} + \frac{5}{5} = \frac{9}{5} = 1\frac{4}{5}$	$\frac{2}{5} + \frac{6}{5} = \frac{8}{5} = 1\frac{3}{5}$
$\frac{1}{3} + \frac{4}{3} = \frac{5}{3} = 1\frac{2}{3}$	$\frac{2}{4} + \frac{3}{4} = \frac{5}{4} = 1\frac{1}{4}$	$\frac{7}{8} + \frac{5}{8} = \frac{12}{8} = 1\frac{4}{8}$	$\frac{7}{10} + \frac{6}{10} = \frac{13}{10} = 1\frac{3}{10}$

Now put these FRACTIONS into their correct order from smallest to largest.

PERCENTAGES %

Percent means divided by 100.

10% means 10 out of 100 or $\frac{10}{100}$ or 0.1

27% means 27 out of 100 or $\frac{27}{100}$ or 0.27

$$15\% = \frac{15}{100} = \frac{3}{20} \quad 25\% = \frac{25}{100} = \frac{1}{4} \quad 30\% = \frac{30}{100} = \frac{3}{10} \quad 12\% = \frac{12}{100} = \frac{3}{25}$$

$$75\% = \frac{75}{100} = \frac{3}{4} \quad 60\% = \frac{60}{100} = \frac{3}{5} \quad 45\% = \frac{45}{100} = \frac{9}{20} \quad 99\% = \frac{99}{100}$$

$$100\% = \frac{100}{100} = 1 \quad 12.5\% = \frac{125}{1000} = \frac{1}{8} \quad 0.5\% = \frac{5}{1000} \quad 0.1\% = \frac{1}{1000}$$

- Write these fractions as percentages.

$$\frac{10}{100} = 10\% \quad \frac{16}{100} = 16\% \quad \frac{25}{100} = 25\% \quad \frac{50}{100} = 50\%$$

$$\frac{3}{20} = \frac{15}{100} = 15\% \quad \frac{10}{20} = \frac{50}{100} = 50\% \quad \frac{7}{10} = \frac{70}{100} = 70\%$$

$$\frac{3}{50} = \frac{6}{100} = 6\% \quad \frac{9}{25} = \frac{36}{100} = 36\% \quad \frac{4}{5} = \frac{80}{100} = 80\%$$

- Write these percentages as decimals.

$$27\% = 0.27 \quad 60\% = 0.6 \quad 25\% = 0.25 \quad 50\% = 0.5$$

$$30\% = 0.3 \quad 45\% = 0.45 \quad 19\% = 0.19 \quad 27\% = 0.27$$

- Write these decimals as percentages.

$$0.54 = 54\% \quad 0.82 = 82\% \quad 0.55 = 55\% \quad 0.33 = 33\%$$

$$0.21 = 21\% \quad 0.95 = 95\% \quad 0.6 = 60\% \quad 0.17 = 17\%$$

$$0.05 = 5\% \quad 0.75 = 75\% \quad 0.02 = 2\% \quad 0.37 = 37\%$$

PAWKY PERCENTAGE PAGE

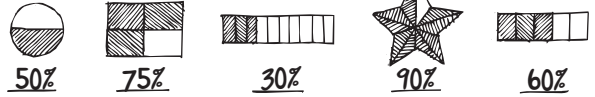
$$\frac{21}{100} = 21\% \quad \frac{37}{100} = 37\% \quad \frac{43}{100} = 43\% \quad \frac{59}{100} = 59\%$$

$$\frac{94}{100} = 94\% \quad \frac{65}{100} = 65\% \quad \frac{36}{100} = 36\% \quad \frac{15}{100} = 15\%$$

$$\frac{1}{10} = \frac{10}{100} = 10\% \quad \frac{9}{10} = \frac{90}{100} = 90\% \quad \frac{3}{25} = \frac{12}{100} = 12\%$$

$$\frac{3}{20} = \frac{15}{100} = 15\% \quad \frac{9}{20} = \frac{45}{100} = 45\% \quad \frac{3}{50} = \frac{6}{100} = 6\%$$

WHAT PERCENTAGE IS SHADED?



SHADE IN THE GIVEN PERCENT



PERCY PIG PERCENTAGE PUZZLES!

HOW DO YOU KNOW WHEN YOU'RE AT PERCY'S?
THE PLACE IS A PIGSTY

9 95 38 28 65 84 94 38 56 70 84 28 56 17 70 9 20

WHAT DOES THE VET GIVE PERCY FOR HIS SORES?
S O M E O I N K M E N T

70 74 55 38 74 56 52 80 55 38 52 9



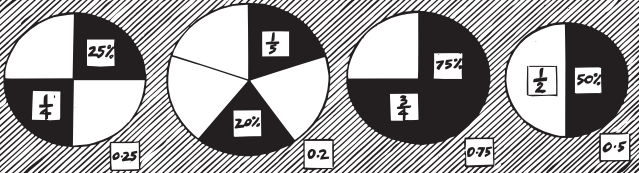
$$G \frac{17}{100} = 17\% \quad T \frac{9}{100} = 9\% \quad P \frac{28}{25} = 112\% \quad C \frac{94}{100} = 94\% \quad Y \frac{2}{10} = 20\%$$

$$S \frac{7}{10} = 70\% \quad K \frac{8}{10} = 80\% \quad M \frac{11}{20} = 55\% \quad L \frac{13}{20} = 65\% \quad H \frac{19}{20} = 95\%$$

$$N \frac{13}{25} = 52\% \quad A \frac{21}{25} = 84\% \quad E \frac{19}{50} = 38\% \quad I \frac{28}{50} = 56\% \quad O \frac{37}{50} = 74\%$$

21 ↔ 22
23 ↔ 24

Equivalent percentages, fractions, and decimals.



Write the correct numerals in the spaces.

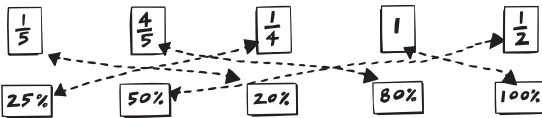
1 $50\% = \frac{50}{100} = \frac{1}{2}$ 2 $25\% = \frac{25}{100} = \frac{1}{4}$

3 $75\% = \frac{75}{100} = \frac{3}{4}$ 4 $20\% = \frac{20}{100} = \frac{1}{5}$

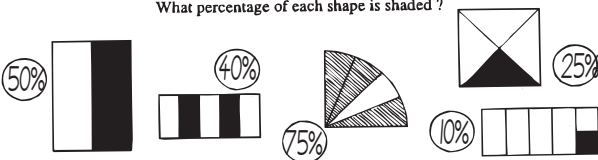
Complete this table.

Percentage	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Tenths	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$	$\frac{5}{10}$	$\frac{6}{10}$	$\frac{7}{10}$	$\frac{8}{10}$	$\frac{9}{10}$	$\frac{10}{10}$

Match up the percentages with the fractions.



What percentage of each shape is shaded?



PERCENTAGES NUMBERS!

1 To find 50% of 10 : $\frac{50}{100} \times 10$
or $\frac{1}{2}$ of 10 = 5
 \therefore 50% of 10 is 5

Find 50% of :

20	26	34	50	68	74	90	99
10	13	17	25	34	37	45	49

2 Find 25% of 28 : $\frac{25}{100} \times 28$
or $\frac{1}{4} \times 28 = \frac{28}{4} = 7$
 \therefore 25% of 28 is 7

Find 25% of :

12	20	36	40	80	200	1000	50
3	5	9	10	20	50	250	125

or $12\frac{1}{2}$

3 Find 30% of 20 : $\frac{30}{100} \times 20$
or $\frac{3}{10} \times 20 = \frac{60}{10} = 6$
 \therefore 30% of 20 is 6

Find 30% of :

21	30	36	60	100	210	1000	150
7	10	12	20	33	$3\frac{1}{3}$	70	$33\frac{1}{3}$

-PERCENTAGES OF QUANTITIES

<p>1</p> <ul style="list-style-type: none"> A woman's income is \$500 per week. She gets a 10% raise. How much does she now earn? <p>THIS MEANS 10% of 500</p> $= \frac{10}{100} \times 500$ $= 10 \times 500$ $= 50$ <p>∴ she gets a \$50 raise and now earns \$550!</p>	<p>2</p> <ul style="list-style-type: none"> A shop offers a discount of 30% off all its prices. You see a telephone for \$150. <p>THIS MEANS 30% of 150</p> $= \frac{30}{100} \times 150$ $= \frac{3}{10} \times 150$ $= 45$ <p>How much is the discount? You get a \$45 discount and only pay (\$150 - \$45) \$105</p>	<p>3</p> <ul style="list-style-type: none"> Your parents decide to give you a 20% raise in your allowance. You get \$5 a week now. How much will you get after the raise? $= \frac{20}{100} \times \5 $= \$1 \text{ raise (New allowance)}$ $= \$6$
---	--	---

<p>4</p> <ul style="list-style-type: none"> You save \$600 and spend 30% of it. How much do you have left? $\frac{30}{100} \times 600 = 180$ $\$600 - \$180 = \$420 \text{ left}$	<p>5</p> <ul style="list-style-type: none"> A factory has 1200 employees. 75% of them are women. How many men and women work at the factory? $\frac{75}{100} \times 1200 = 900 \text{ women}$ $= 300 \text{ men}$
<p>6</p> <ul style="list-style-type: none"> The high score on a video game is 1200. You score 10% less than this. What is your score? $\frac{10}{100} \times 1200 = 120$ $= 1200 - 120$ $= 1080 \text{ points}$	<p>7</p> <ul style="list-style-type: none"> You eat 20% of the chocolates in a box that has 50 chocolates. How many chocolates did you eat? How many are left? $\frac{20}{100} \times 50 = 10 \text{ chocolates}$ $= 40 \text{ chocs left}$

25 ← → 26
27 ← → 28



CRAZY CONVERSIONS



% → FRACTION		% → DECIMAL	
19% = $\frac{19}{100}$	20% = $\frac{20}{100} = \frac{1}{5}$	19% = 0.19	60% = 0.6
63% = $\frac{63}{100}$	40% = $\frac{40}{100} = \frac{2}{5}$	28% = 0.28	25% = 0.25
81% = $\frac{81}{100}$	50% = $\frac{50}{100} = \frac{1}{2}$	56% = 0.56	8% = 0.08
99% = $\frac{99}{100}$	75% = $\frac{75}{100} = \frac{3}{4}$	94% = 0.94	5% = 0.05
7% = $\frac{7}{100}$	85% = $\frac{85}{100} = \frac{17}{20}$	10% = 0.1	150% = 1.5

IMPORTANT ELEPHANT INFORMATION!
TO UNCOVER SOME IMPORTANT FACTS ABOUT ELEPHANTS, EACH LETTER BELOW NEEDS A CONVERSION

B = 30%	C = 23%	K = 8%	M = 90%	R = 35%	W = 57%	H = 16%
P = 41%	Z = 14%	I = 500%	G = 28%	O = 33 1/3%	S = 31%	E = 50%
L = 11%	A = 60%	Q = 40%	N = 12 1/2%	T = 200%	V = 66 2/3%	F = 74%

WHAT DO YOU GIVE TO SICK ELEPHANTS?
TRUNK QUILLS ZERS

HOW DO YOU MAKE AN ELEPHANT FLY?
START WITH A TWO METRE ZIP

WHY DID THE LADY ELEPHANT STOP TAP DANCING?
SHE FELL INTO THE SINK

WHAT DO YOU GET IF YOU CROSS A KANGAROO & ELEPHANT?
BIG HOLES ACROSS AUSTRALIA

QUOTE-A-BILL QUANTITIES

A DISCOUNT IS MONEY SUBTRACTED FROM THE PRICE

<p>SHOES</p> <p>SHOP PRICE = \$60</p> <p>DISCOUNT = 10% of \$60</p> $= \frac{10}{100} \times 60$ $= \$6$ <p>SALE PRICE = \$54</p>	<p>TOP</p> <p>SHOP PRICE = \$42</p> <p>DISCOUNT = 50% of \$42</p> $= \frac{1}{2} \times 42$ $= \$21$ <p>SALE PRICE = \$21</p>
--	--

DO THE CALCULATIONS TO COMPLETE THIS TABLE!

ORIGINAL PRICE	BIKE \$250	HAT \$12	BOOK \$40	TAPE \$10	HOLIDAY \$800	SOCKS \$5
% DISCOUNT	20%	25%	10%	30%	5%	40%
AMOUNT OF DISCOUNT	\$50	\$3	\$4	\$3	\$40	\$2
SALE PRICE	\$200	\$9	\$36	\$7	\$760	\$3

G.S.T. IS A TAX ADDED TO THE PRICE (IN NZ IT IS 12.5%)

PHONE RENTAL = \$30	GAS ACCOUNT = \$13
TOLL ACCOUNT = \$18	SERVICE FEE = \$7
TOTAL = 48	TOTAL = 20
+ 12.5% G.S.T. = \$6	+ 12.5% G.S.T. = \$2.50
FINAL BILL = \$54	FINAL BILL = \$22.50

COMPLETE THE TABLE TO UNCOVER A SAD QUOTE!

ACCOUNT	16c	56c	\$24	80c	\$32	72c	\$40	488
+12.5% G.S.T.	2s	7A	3v	10L	4K	9B	5M	11G
TOTAL BILL	18c	F	63c	I	\$27R	90c	V	\$36E
								8L
								\$45T
								\$99N

"OVER INELATION MAKES ONE GO BUST!"
813 3627 63 99 18 10 7 45 63 81 99 57 4 36 2 81 99 36 11 81 9 90 2 45

-MORE ON PERCENT-

LANA GOT 40 MARKS OUT OF 80. SHE SCORED	$\frac{40}{80} = 50\%$
GANA GOT 37 MARKS OUT OF 50. SHE SCORED	$\frac{37}{50} = 74\%$
SITU GOT 19 MARKS OUT OF 25. SHE SCORED	$\frac{19}{25} = 76\%$
FITU GOT 8 MARKS OUT OF 10. SHE SCORED	$\frac{8}{10} = 80\%$

WHOSE RESULT WAS THE BEST? FITU

ANNA KEPT A RECORD OF HER EARNINGS AND SAVINGS FOR THE 5 WEEKS SHE WORKED.

COMPLETE HER TABLE!

	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5
EARNINGS	\$100	\$90	\$120	\$80	\$150
SAVINGS	\$48	\$45	\$66	\$32	\$60
% SAVED	48%	50%	55%	40%	40%

NOW LINE UP EACH SUM WITH ITS CORRECT ANSWER TO COMPLETE THE SENTENCE!

WHAT % IS 30 OF 60 → 50 (THIS ONE IS DONE FOR YOU)

WHAT % IS 8 OF 20 → 40

WHAT % IS 5 OF 25 → 20

WHAT % IS 9 OF 90 → 10

WHAT % IS 14 OF 280 → 5%

WHAT % IS 2 OF 16 → 12.5%

WHAT % IS 12 OF 98 → 12.2%

WHAT % IS 3 OF 120 → 2.5%

WHAT % IS 21 OF 70 → 30%

WHAT % IS 24 OF 40 → 60%

FIND 10% OF 950 → 95

FIND 20% OF 500 → 100

FIND 25% OF 300 → 75

FIND 40% OF 180 → 72

FIND 50% OF 164 → 82

FIND 60% OF 150 → 90

FIND 75% OF 108 → 81

FIND 100% OF 35 → 35

THE SAW-DOCTOR'S JOURNEY INTO AFRICA WAS TO...

... BRING BACK DINOSAURS

DECIMALS

Our numbering system is based on tens. Each digit has a place value.

Decimals include numbers less than 1.

Here are some decimal fractions

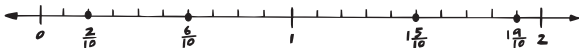
$$0.3 = \frac{3}{10} \quad 0.7 = \frac{7}{10} \quad 1.6 = 1\frac{6}{10}$$

$$0.11 = \frac{11}{100} \quad 0.135 = \frac{135}{1000}$$

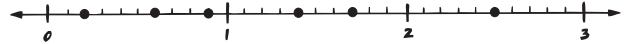
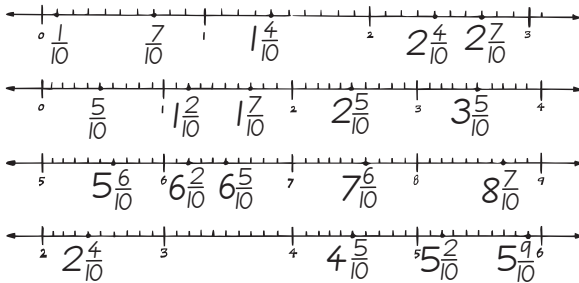
Write these decimals as fractions

$0.7 = \frac{7}{10}$	$0.3 = \frac{3}{10}$	$0.6 = \frac{6}{10}$	$0.5 = \frac{5}{10}$	$3.2 = 3\frac{2}{10}$
$2.7 = 2\frac{7}{10}$	$1.4 = 1\frac{4}{10}$	$0.1 = \frac{1}{10}$	$1.1 = 1\frac{1}{10}$	$2.0 = 2$
$0.01 = \frac{1}{100}$	$0.43 = \frac{43}{100}$	$0.62 = \frac{62}{100}$	$0.22 = \frac{22}{100}$	$0.05 = \frac{5}{100}$
$1.21 = 1\frac{21}{100}$	$4.05 = 4\frac{5}{100}$	$6.00 = 6$	$7.12 = 7\frac{12}{100}$	$1.11 = 1\frac{11}{100}$

The number line below is divided into tenths. Different points are shown



What numbers are shown on these number lines



Show these decimal numbers on the number line above.

0.2 0.6 0.9 1.4 1.7 2.5

REMEMBER

> means "is greater than"

< means "is less than"

Put in the > or < signs

$0.5 > 0.2$	$0.6 < 0.9$
$0.55 > 0.5$	$2.1 > 1.9$
$2.44 < 2.5$	$6.09 < 6.1$
$0.24 < 0.9$	$0.76 > 0.5$
$0.99 < 0.999$	$0.83 > 0.81$

- NOW WRITE THESE FRACTIONS AS DECIMALS!

$$\frac{9}{10} = 0.9 \quad \frac{4}{10} = 0.4 \quad \frac{5}{10} = 0.5 \quad \frac{20}{100} = 0.2$$

$$\frac{36}{100} = 0.36 \quad \frac{6}{100} = 0.06 \quad \frac{45}{10} = 4.5 \quad \frac{800}{100} = 8$$

$$\frac{37}{10} = 3.7 \quad \frac{14}{100} = 0.14 \quad \frac{416}{100} = 4.16 \quad \frac{12}{100} = 0.12$$

$$\frac{1}{100} = 0.01 \quad \frac{16}{10} = 1.6 \quad \frac{125}{10} = 12.5 \quad \frac{190}{100} = 1.9$$

29 ↔ 30
31 ↔ 32

LET'S GET TO THE POINT WITH DAVE!

- DAVE'S EXCELLENT DECIMAL ADDITION

0.1	0.1	0.6	0.5	1.2
0.1	0.3	0.2	0.5	2.3
0.2	0.4	0.8	1.0	3.5

4.1	3.5	4.15	5.61	4.68
3.6	2.2	3.64	2.08	5.12
7.7	5.7	7.79	7.69	9.80

3.2	5.3	1.14	2.06	2.25
3.4	4.5	2.12	5.13	6.35
6.6	9.8	3.26	7.19	8.60

- DAVE'S DISTINGUISHED DECIMAL SUBTRACTION!

0.3	0.9	0.8	3.8	9.8
-0.1	-0.6	-0.7	-2.6	-5.4
0.2	0.3	0.1	1.2	4.4

0.87	0.77	0.83	2.57	4.68
-0.42	-0.15	-0.51	-1.41	-3.41
0.45	0.62	0.32	1.16	1.27

6.53	7.4	6.5	8.2	10.6
-3.53	-0.4	-0.9	-0.6	-2.7
3.00	7.0	5.6	7.6	7.9

SOME POINTED OBJECTS!

A	$0.2 + 0.1$	L	$0.14 + 0.26$	A	SPEAR
P	$0.2 - 0.1$	E	$0.4 + 0.2$	A	PIN
N	$0.65 + 0.35$	S	$0.4 - 0.2$	A	CLASS TEST
L	$0.65 - 0.33$	R	$0.87 + 0.09$	A	NAIL
		K	$0.87 - 0.09$		
		I	$0.78 + 0.32$		

DECIMAL ADDITION AND SUBTRACTION

ADDITION

Rule: Keep the decimal points under each other. No calculators for this page.

1

0.2	0.6	1.4	6.5	2.1	7.4
$+0.7$	$+0.2$	$+2.3$	$+3.4$	$+3.8$	$+2.6$
0.9	0.8	3.7	9.9	5.9	10.0

2

4.4	3.7	4.5	7.1	5.2	6.6
$+7.3$	$+9.2$	$+6.4$	$+6.8$	$+5.5$	$+7.3$
11.7	12.9	10.9	13.9	10.7	13.9

3

3.7	2.5	4.3	7.7	6.4	4.8
$+2.4$	$+1.8$	$+2.9$	$+1.8$	$+2.8$	$+4.4$
6.1	4.3	7.2	9.5	9.2	9.2

4

4.6	3.7	6.6	5.8	3.4	7.9
$+5.6$	$+8.6$	$+5.8$	$+6.7$	$+9.8$	$+6.8$
10.2	12.3	12.4	12.5	13.2	14.7

5

SUBTRACTION

0.9	2.7	3.3	4.5	3.4
-0.4	-1.4	-2.1	-2.3	-1.1
0.5	1.3	1.2	2.2	2.3

6

4.3	3.2	2.7	4.1	3.4	6.2
-1.5	-0.7	-1.9	-2.6	-2.8	-1.9
2.8	2.5	0.8	1.5	0.6	4.8

7

19.3	17.2	15.1	16.7	18.3	12.1
-7.3	-4.6	-3.5	-4.9	-2.7	-1.7
12.0	12.6	11.6	11.8	15.6	10.4

8

34.2	14.5	27.1	29.4	32.1	16.5
-6.5	-9.7	-18.6	-19.7	-27.9	-8.7
27.7	4.8	8.5	9.7	4.7	7.8

9

136	224	148	141	278	164
$+125$	$+117$	$+123$	$+249$	$+115$	$+129$
261	341	271	390	393	293

10

153	192	234	211	251	222
-116	-159	-107	-103	-136	-116
37	33	127	108	115	107

- DAVE'S DECIMALS -



0.23 $\times 2$ <hr/> 0.46	0.72 $\times 4$ <hr/> 2.88	0.63 $\times 3$ <hr/> 1.89	0.91 $\times 5$ <hr/> 4.55	0.82 $\times 6$ <hr/> 4.92
0.16 $\times 7$ <hr/> 1.12	0.76 $\times 6$ <hr/> 4.56	0.99 $\times 8$ <hr/> 7.92	0.49 $\times 4$ <hr/> 1.96	0.53 $\times 5$ <hr/> 2.65
7.13 $\times 3$ <hr/> 21.39	4.21 $\times 8$ <hr/> 33.68	2.98 $\times 7$ <hr/> 20.86	3.68 $\times 8$ <hr/> 29.44	2.34 $\times 9$ <hr/> 21.06

— WHAT DID THE DOG SAY WHEN IT SAT ON THE SANDPAPER?

X	4	.1	.02	.06	.9	8	.6	.3	.05
3	12	.3	.06	.18	2.7	24	1.8	.9	.15
.2	.8			.012	.18	1.6			
.4		.04	.008	.024	3.6	32		.12	.02
.8		.08		.048		6.4			.04
.5		.05		.03	4		.15	.025	
6		.6		.36	48		1.8	.3	
2		.2		.12	16		.6	.1	
.9		.09			7.2		.27		

SHADE IN ALL THE MISTAKES TO FIND OUT!
(YOU SHOULD FIND 30 MISTAKES)



33 ↔ 34
35 ↔ 36

- COMPLETE THESE TABLES -

X	20
10	200
20	400
50	1000
100	2000

X	16
10	160
100	1600
200	3200
500	8000

X	22
5	110
10	220
20	440
100	2200

X	18
100	1800
50	900
10	180
5	90

X	27
20	540
40	1080
80	2160
100	2700

X	35
10	350
20	700
30	1050
50	1750

Write a > or < to make each sentence true

10×35	$>$	300	20×17	$<$	350
15×100	$>$	155	40×80	$>$	320
5×43	$>$	200	10×82	$>$	700
5×16	$>$	50	100×5	$>$	490
10×12	$<$	150	20×12	$<$	300
100×6	$>$	60	15×20	$<$	350

- TONNES OF TENS -

$8.04 \times 10 = 80.4$	$9.765 \times 1000 = 9765$	$79.1 \div 100 = 0.791$
$0.84 \times 10 = 8.4$	$0.97 \times 1000 = 970$	$7901 \div 100 = 79.01$
$8.914 \times 100 = 891.4$	$8.04 \div 10 = 0.804$	$980.1 \div 1000 = 0.9801$
$0.894 \times 100 = 89.4$	$804 \div 10 = 80.4$	$9088 \div 1000 = 9.088$
$0.8 \times 100 = 80$	$0.84 \div 10 = 0.084$	$0.7 \div 1000 = 0.0007$

WHY WERE THE STUDENT AND THE WITCH SMILING?

LINE UP EACH SUM WITH ITS CORRECT SOLUTION TO FIND THE ANSWER!

5.6×100	5.6
0.56×10000	0.0056
$560 \div 10$	560 (THIS ONE IS DONE FOR YOU!)
$5.6 \div 1000$	3.12
56×1000	312
0.0056×10	5600
$56000 \div 10000$	0.000312
$56 \div 100$	0.00312
0.56×1000000	0.056
31.2×1000	31200
$3.12 \div 100$	3120
$0.00312 \div 10$	56
3.12×100000	0.56
0.0312×100	0.0312
$3120 \div 1000000$	31.2
$31200 \div 1000$	312000
0.312×10000	56000
$3120 \div 10$	560000

B O T H P A S S E D S P E L L I N G!

did you?

NOW WRITE THESE NUMBERS USING WORDS.
 560 FIVE HUNDRED AND SIXTY
 3124 THREE THOUSAND ONE HUNDRED AND TWENTY FOUR
 87.9 EIGHTY SEVEN POINT NINE
 7002.8 SEVEN THOUSAND AND TWO POINT EIGHT

- DAVE'S DECIMAL ALL-SORTS DO-DA-CRAZY-DECIMAL PUDES!

2.06 $+ 7.18$ <hr/> 9.24	1.87 $+ 0.59$ <hr/> 2.46	9.58 $+ 7.69$ <hr/> 17.27	8.72 $- 3.14$ <hr/> 5.58	16.85 $- 11.58$ <hr/> 5.27
3.5 $\times 2$ <hr/> 7.0	5.3 $\times 2$ <hr/> 10.6	4.2 $\times 3$ <hr/> 12.6	2.4 $\times 5$ <hr/> 12.0	1.6 $\times 5$ <hr/> 8.0
2.12 $4 \overline{) 8.48}$	1.12 $6 \overline{) 6.72}$	1.32 $8 \overline{) 10.56}$	3.97 $10 \overline{) 39.7}$	2.206 $12 \overline{) 26.472}$
25.6 $- 17.4$ <hr/> 8.2	43.8 $- 27.9$ <hr/> 15.9	39.7 $- 32.8$ <hr/> 6.9	93.25 $+ 58.89$ <hr/> 152.14	75.64 $+ 38.36$ <hr/> 114.00

NOW DO THESE SUMS TO DISCOVER A FAMOUS DECIMAL YEAR IN N.Z.!

Y $\$0.83$ $+ 0.67$ <hr/> $\$1.50$	V $\$1.38$ $+ 0.62$ <hr/> $\$2.00$	I $\$2.75$ $- 1.35$ <hr/> $\$1.40$	X $\$3.41$ $- 2.76$ <hr/> $\$0.65$
S $\$0.32$ $\times 5$ <hr/> $\$1.60$	T $\$1.25$ $\times 4$ <hr/> $\$5.00$	E $\$0.40$ $7 \overline{) 2.80}$	N $\$1.80$ $6 \overline{) 10.80}$

NINETEEN SIXTY SEVEN

(WHY WAS IT SO IMPORTANT?)

In 1967 - New Zealand changed to decimal currency

DAVE'S DANGEROUS DECIMALS

DAVE SUGGESTS YOU USE A CALCULATOR



3619.57	3594.07	510.234	148.675
$+1248.68$	$+1483.56$	$+667.981$	$+728.149$
<u>4868.25</u>	<u>5077.63</u>	<u>1178.215</u>	<u>876.824</u>

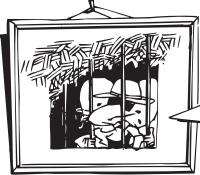
$1959.63 + 812.54 + 70.26 + 3.19 = 2845.62$

42.65	951.34	73.589	6.050
-21.88	-240.25	-14.983	-1.123
<u>20.77</u>	<u>711.09</u>	<u>58.606</u>	<u>4.927</u>

$1959.63 - 812.54 - 70.26 - 3.19 = 1073.64$

3.04	4.321	4.1	405.1
$13 \overline{) 39.52}$	$20 \overline{) 86.420}$	$0.6 \overline{) 2.46}$	$1.5 \overline{) 607.65}$

WHAT'S HAPPENED TO DAVE NOW?



"HELP ME
I'VE BEEN
FRAMED!"

HERE DWELLS DASTARDLY
DAVE DECIMAL, DOBBED IN FOR
DAMAGING CLASSIFIED DECIMALS.



\$ MONEY MATH \$

$\$0.38$	$\$0.94$	$\$0.75$	$\$0.92$	$\$0.44$
$+0.12$	$+0.46$	$+0.15$	-0.07	-0.29
<u>$\\$0.50$</u>	<u>$\\$1.40$</u>	<u>$\\$0.90$</u>	<u>$\\$0.85$</u>	<u>$\\$0.15$</u>

$\$2.76$	$\$1.79$	$\$4.36$	$\$7.10$	$\$8.26$
$+2.34$	$+0.81$	-2.41	-5.35	-1.96
<u>$\\$5.10$</u>	<u>$\\$2.60$</u>	<u>$\\$1.95$</u>	<u>$\\$1.75$</u>	<u>$\\$6.30$</u>

FIND THE COST OF:

4 MATS AT \$7.25 EACH $\$29$	2 LOTS AT \$82.95 EACH $\$165.90$
6 HATS AT \$15.40 EACH $\$92.40$	900 DOTS AT 30¢ EACH $\$270$
10 RATS AT \$1.65 EACH $\$16.50$	8 LOTS AT \$54.20 EACH $\$433.60$
3 BATS AT \$98.90 EACH $\$296.70$	5 POTS AT \$48.50 EACH $\$242.50$

HOW MUCH CHANGE FROM:

\$10 WHEN YOU SPEND \$6.80 $\$3.20$
\$10 WHEN YOU BUY 2 PENS AT \$1.35 EACH $\$7.30$
\$20 WHEN YOU SPEND \$11.30 $\$8.70$
\$20 WHEN YOU BUY 5 DISCS AT \$2.75 EACH $\$6.25$
\$50 WHEN YOU BUY 3 BOOKS AT \$1.40, \$1.60, \$1.80, 3 COVERS AT 70¢ EACH AND 4 FELT TIPS AT \$3.20 EACH $\$30.30$

$\$28.76$	$\$85.74$	$\$64.48$	$\$75.34$	$\$43.70$
$+10.79$	$+23.96$	-16.88	-32.99	-29.90
<u>$\\$39.55$</u>	<u>$\\$109.20$</u>	<u>$\\$47.60$</u>	<u>$\\$42.35$</u>	<u>$\\$13.80$</u>

ANSWER TO THE NEAREST DOLLAR

$\$3.20 + \$4.60 \approx \$8$	$\$7.35 + \$5.05 \approx \$12$
$\$2.85 + \$1.20 \approx \$4$	$\$2.90 + \$2.80 \approx \$6$
$\$9.60 - \$8.75 \approx \$1$	$\$6.25 - \$3.95 \approx \$2$
$\$24.35 - \$12.50 \approx \$12$	$\$17.80 - \$9.20 \approx \$9$

37 ← → 38
39 ← → 40

MULTIPLYING DECIMALS

Rule: Count how many decimal places.

The answer must have that many places

Find the answers
(calculators optional)

EXAMPLES

$4.2 \times 3 = 12.6$ 1 decimal place	$2.4 \times 1.2 = 2.88$ 2 decimal places
$2.14 \times 2 = 4.28$ 2 decimal places	$3.11 \times 0.5 = 1.555$ 3 decimal places

1	$\begin{array}{r} 3.2 \\ \times 6 \\ \hline 19.2 \end{array}$	$\begin{array}{r} 4.1 \\ \times 5 \\ \hline 20.5 \end{array}$	$\begin{array}{r} 5.4 \\ \times 2 \\ \hline 10.8 \end{array}$	$\begin{array}{r} 2.1 \\ \times 8 \\ \hline 16.8 \end{array}$	$\begin{array}{r} 4.4 \\ \times 2 \\ \hline 8.8 \end{array}$	$\begin{array}{r} 3.2 \\ \times 4 \\ \hline 12.8 \end{array}$
2	$\begin{array}{r} 4.2 \\ \times 6 \\ \hline 25.2 \end{array}$	$\begin{array}{r} 3.3 \\ \times 4 \\ \hline 13.2 \end{array}$	$\begin{array}{r} 6.4 \\ \times 3 \\ \hline 19.2 \end{array}$	$\begin{array}{r} 5.5 \\ \times 5 \\ \hline 27.5 \end{array}$	$\begin{array}{r} 4.2 \\ \times 8 \\ \hline 33.6 \end{array}$	$\begin{array}{r} 9.3 \\ \times 5 \\ \hline 46.5 \end{array}$
3	$\begin{array}{r} 2.7 \\ \times 8 \\ \hline 21.6 \end{array}$	$\begin{array}{r} 4.6 \\ \times 5 \\ \hline 23.0 \end{array}$	$\begin{array}{r} 9.3 \\ \times 8 \\ \hline 74.4 \end{array}$	$\begin{array}{r} 5.7 \\ \times 6 \\ \hline 34.2 \end{array}$	$\begin{array}{r} 3.9 \\ \times 6 \\ \hline 23.4 \end{array}$	$\begin{array}{r} 8.4 \\ \times 7 \\ \hline 58.8 \end{array}$
4	$\begin{array}{r} 6.1 \\ \times 0.5 \\ \hline 3.05 \end{array}$	$\begin{array}{r} 3.7 \\ \times 0.2 \\ \hline 0.74 \end{array}$	$\begin{array}{r} 4.4 \\ \times 0.3 \\ \hline 1.32 \end{array}$	$\begin{array}{r} 6.2 \\ \times 0.5 \\ \hline 3.1 \end{array}$	$\begin{array}{r} 5.3 \\ \times 1.6 \\ \hline 8.48 \end{array}$	$\begin{array}{r} 4.4 \\ \times 1.3 \\ \hline 5.72 \end{array}$
5	$\begin{array}{r} 35.6 \\ \times 4 \\ \hline 142.4 \end{array}$	$\begin{array}{r} 17.21 \\ \times 8 \\ \hline 137.68 \end{array}$	$\begin{array}{r} 16.22 \\ \times 7 \\ \hline 113.54 \end{array}$	$\begin{array}{r} 5.21 \\ \times 9 \\ \hline 46.89 \end{array}$	$\begin{array}{r} 6.71 \\ \times 3 \\ \hline 20.13 \end{array}$	$\begin{array}{r} 13.21 \\ \times 5 \\ \hline 66.05 \end{array}$
6	$\begin{array}{r} 16.6 \\ \times 2.2 \\ \hline 36.52 \end{array}$	$\begin{array}{r} 14.5 \\ \times 3.7 \\ \hline 53.65 \end{array}$	$\begin{array}{r} 4.9 \\ \times 2.3 \\ \hline 11.27 \end{array}$	$\begin{array}{r} 5.4 \\ \times 1.7 \\ \hline 9.18 \end{array}$	$\begin{array}{r} 6.2 \\ \times 3.5 \\ \hline 21.7 \end{array}$	$\begin{array}{r} 7.8 \\ \times 4.4 \\ \hline 34.32 \end{array}$

Now use your calculator

$0.607 \times 0.5 = 0.3035$	$4.71 \times 6.45 = 30.3745$	$3.78 \times 2.11 = 7.9758$	$6.55 \times 3.07 = 20.1085$	$5.23 \times 9.58 = 50.1034$
-----------------------------	------------------------------	-----------------------------	------------------------------	------------------------------

$19 \times 34.785 = 660.915$	$24 \times 16.217 = 389.208$	$16.5 \times 18 = 297$
$2.7.5 \times 13.9 = 382.25$	$14.7 \times 2.615 = 384.405$	$19.8 \times 15.27 = 302.346$

DIVISION REVISION

No calculators for this page

EXAMPLES

$9.7 \times 10 = 97$	$58.119 \times 100 = 5811.9$
$6.4 \times 10 = 64$	$12.7 \times 10 = 127$
$3.24 \times 10 = 32.4$	$5.771 \times 10 = 57.71$
$0.0514 \times 100 = 5.14$	$6.0892 \times 100 = 608.92$
$9.2 \times 100 = 920$	$0.6 \times 1000 = 600$
$0.0957 \times 1000 = 95.7$	$87.24 \times 1000 = 87240$

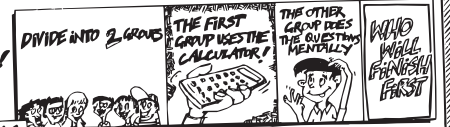
DIVIDING DECIMALS BY 10, 100 & 1000

Rule: Move the decimal point to the left

EXAMPLES

$627 \div 10 = 62.7$	$582 \div 100 = 5.82$
$3.4 \div 10 = 0.34$	$2.7 \div 10 = 0.27$
$0.55 \div 10 = 0.055$	$12.23 \div 10 = 1.223$
$16.3 \div 100 = 0.163$	$34.88 \div 100 = 0.3488$
$410 \div 100 = 4.10$	$79 \div 1000 = 0.079$
$548.1 \div 1000 = 0.5481$	$736.63 \div 1000 = 0.73663$

BEAT THE CALCULATOR!



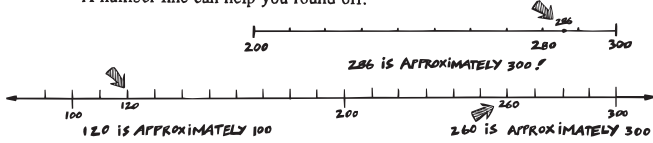
START NOW!

$64 \times 10 = 640$	$12.6 \times 10 = 126$
$9.65 \times 100 = 965$	$0.543 \times 100 = 54.3$
$2.7 \times 10 = 27$	$8.421 \times 1000 = 8421$

-ROUNDING OFF!



-A number line can help you round off.



Round off these numbers to the nearest 100

330	<u>300</u>	690	<u>700</u>	407	<u>400</u>	85	<u>100</u>
117	<u>100</u>	263	<u>300</u>	470	<u>500</u>	905	<u>900</u>
140	<u>100</u>	158	<u>200</u>	499	<u>500</u>	50	<u>100</u>

Round off these numbers to the nearest 10

87	<u>90</u>	42	<u>40</u>	144	<u>140</u>	236	<u>240</u>
24	<u>20</u>	16	<u>20</u>	391	<u>390</u>	276	<u>280</u>
329	<u>330</u>	465	<u>470</u>	198	<u>200</u>	372	<u>370</u>

Round off these decimals to the nearest whole number.

80.6	<u>81</u>	47.2	<u>47</u>	6.6	<u>7</u>	15.1	<u>15</u>
12.7	<u>13</u>	18.55	<u>19</u>	27.31	<u>27</u>	14.2	<u>14</u>
19.7	<u>20</u>	8.6	<u>9</u>	15.5	<u>16</u>	14.99	<u>15</u>

Rounding to the nearest 100
Circle all those numbers that would round off to 400.
Underline all those numbers that would round off to 500.

496	<u>460</u>	<u>370</u>	<u>407</u>
<u>546</u>	<u>450</u>	<u>531</u>	<u>355</u>

GET INTO GEAR FOR SOME... RACEWAY MATHS!

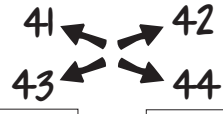
123	65	273	463	413	
243	373	647	840	909	
<u>115</u>	<u>400</u>	<u>189</u>	<u>406</u>	<u>286</u>	
<u>481</u>	<u>838</u>	<u>1109</u>	<u>1709</u>	<u>1608</u>	
342	212	119	313	511	
153	567	400	694	143	
265	658	589	507	349	
<u>104</u>	<u>896</u>	<u>779</u>	<u>899</u>	<u>77</u>	
<u>864</u>	<u>2333</u>	<u>1887</u>	<u>2413</u>	<u>1100</u>	
322	420	243	463	342	
<u>-115</u>	<u>-240</u>	<u>-144</u>	<u>-265</u>	<u>-258</u>	
<u>207</u>	<u>180</u>	<u>99</u>	<u>198</u>	<u>84</u>	
524	637	505	705	243	
<u>-236</u>	<u>-548</u>	<u>-377</u>	<u>-248</u>	<u>-67</u>	
<u>288</u>	<u>89</u>	<u>128</u>	<u>457</u>	<u>176</u>	
23	24	55	44	22	45
<u>x 3</u>	<u>x 5</u>	<u>x 2</u>	<u>x 4</u>	<u>x 6</u>	<u>x 5</u>
<u>69</u>	<u>120</u>	<u>110</u>	<u>176</u>	<u>132</u>	<u>225</u>
<u>79</u>	<u>118</u>	<u>155</u>	<u>67</u>	<u>811</u>	<u>910</u>
2)158	3)354	4)620	5)335	6)4866	7)6370
<u>990</u>	<u>909</u>	<u>1101</u>	<u>469</u>	<u>469</u>	<u>12757</u>
10)9900	9)8181	8)8808	7)3283	6)76542	

-DO-DA-CRAZY DECIMAL SQUARES!

+	2.9	7.2	10.5
0.3	3.2	7.5	10.8
0.8	3.7	8	11.3
1.6	4.5	8.8	12.1

x	0.2	0.9	1.2
6	1.2	5.4	7.2
0.1	0.02	0.09	0.12
0.5	0.1	0.45	0.6

"SOMETIMES ACCURACY IS BETTER THAN SPEED!"
DID YOU GET THE COURSE RECORD?



SQUARES

5² reads "five squared" Mathematically it means 5 x 5, which equals 25

Find the squares of these numbers

2 ² = <u>4</u>	4 ² = <u>16</u>	7 ² = <u>49</u>	3 ² = <u>9</u>
5 ² = <u>25</u>	8 ² = <u>64</u>	6 ² = <u>36</u>	1 ² = <u>1</u>
7 ² = <u>49</u>	10 ² = <u>100</u>	13 ² = <u>169</u>	15 ² = <u>225</u>

Now answer the questions and write each answer in the correct square.
If you have all the answers correct you will have a MAGIC square!

1. 3 ² - 3 = <u>6</u>	6. 4 ² - 13 = <u>3</u>	<table border="1"> <tr><td>1</td><td>6</td><td>8</td></tr> <tr><td>7</td><td>5</td><td>3</td></tr> <tr><td>2</td><td>9</td><td>4</td></tr> </table>	1	6	8	7	5	3	2	9	4
1	6		8								
7	5		3								
2	9		4								
2. 1 ² = <u>1</u>	7. 6 ² ÷ 18 = <u>2</u>										
3. 2 ² + 2 ² = <u>8</u>	8. 5 ² - 4 ² = <u>9</u>										
4. 1 ² + 6 = <u>7</u>	9. 2 ² ÷ 1 ² = <u>4</u>										
5. 30 - 5 ² = <u>5</u>											

You use squares to find the square root of a number.
 $\sqrt{25} = 5$ because $5 \times 5 = 25$

Find the square root of these numbers.

$\sqrt{49} = 7$	$\sqrt{16} = 4$	$\sqrt{25} = 5$	$\sqrt{36} = 6$
$\sqrt{64} = 8$	$\sqrt{44} = 12$	$\sqrt{9} = 3$	$\sqrt{1} = 1$
$\sqrt{81} = 9$	$\sqrt{4} = 2$	$\sqrt{100} = 10$	$\sqrt{169} = 13$

Answer each question and write the answer in the correct square.
You should have another magic square!

1. $\sqrt{36} + \sqrt{16} = 10$	6. $\sqrt{81} + 2 = 13$	11. $5^2 - \sqrt{81} = 16$	<table border="1"> <tr><td>10</td><td>5</td><td>11</td><td>22</td></tr> <tr><td>20</td><td>13</td><td>17</td><td>8</td></tr> <tr><td>21</td><td>10</td><td>16</td><td>9</td></tr> <tr><td>7</td><td>18</td><td>14</td><td>19</td></tr> </table>	10	5	11	22	20	13	17	8	21	10	16	9	7	18	14	19
10	5	11		22															
20	13	17		8															
21	10	16		9															
7	18	14		19															
2. $\sqrt{25} + 10 = 15$	7. $5^2 - \sqrt{64} = 17$	12. $\sqrt{144} - \sqrt{4} = 9$																	
3. $6^2 - 5^2 = 11$	8. $\sqrt{64} = 8$	13. $\sqrt{36} + 1 = 7$																	
4. $\sqrt{21} + \sqrt{21} = 22$	9. $\sqrt{44} \times 3 = 21$	14. $\sqrt{100} + 2^2 + 4 = 18$																	
5. $\sqrt{25} \times 4 = 20$	10. $4^2 - 2^2 = 12$	15. $8^2 - 7^2 - 1^2 = 14$																	

...WHAT DID MARG SAY TO PEPPA?



BY COMPLETING THE TABLES BELOW AND THEN DOING THE SUMS, YOU'LL FIND OUT!

NUMBER	1	2	5	6	8	9	12	13	15	16	20	25
SQUARE	1	4	25	36	64	81	144	169	225	256	400	625

NUMBER	4	9	16	49	100	121	196	1000000
SQUARE ROOT	2	3	4	7	10	11	14	1000

A	3 ² + 5 = <u>14</u>	I	$\sqrt{36} + 10 = 16$
C	2 + 4 ² = <u>18</u>	L	6 + $\sqrt{81} = 15$
D	7 ² - 29 = <u>20</u>	N	$\sqrt{144} - 1 = 11$
E	124 - 10 ² = <u>24</u>	O	17 - $\sqrt{25} = 12$
F	11 ² - 95 = <u>26</u>	R	$\sqrt{400} - \sqrt{9} = 17$
G	2 ² + 3 ² = <u>13</u>	S	$\sqrt{144} + 3^2 = 21$
Y	5 ² - 6 = <u>19</u>	M	$\sqrt{49} + \sqrt{9} = 10$

"L I F E I N M Y F R I D G E I S
15 16 26 24 16 11 10 19 26 17 16 20 13 24 16 21
R E A L C O O L!"

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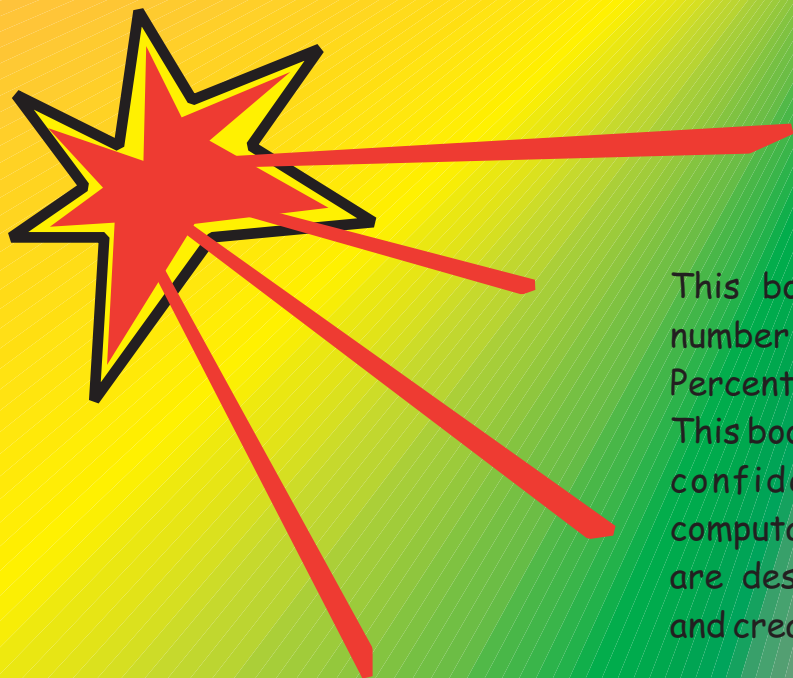
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