Percentages of amounts

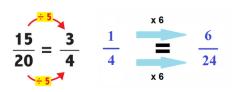| Finding 10%	Finding 1%
Find 70% of 60	**Find 18% of 250**
1. Find 10% by dividing the amount by 10. $60 \div 10 = 6$	1. Find 1% by dividing the amount by 100. $250 \div 100 = 2.5$
2. Multiply this answer by the number of tens in the percentage. $6 \times 7 = 42$	2. Multiply this answer by the number of the percentage. $2.5 \times 18 = 45$
70% of 60 = 42	**18% of 250 = 45**

Order of Operations

B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
O	Order	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 \div 2 - 3 = 5 - 3 = 2$

Finding Equivalent Fractions

$$\frac{15}{20} = \frac{3}{4}$$ (÷5)

$$\frac{1}{4} = \frac{6}{24}$$ (x 6)

Remember: Whatever you multiply or divide the numerator by, you must do the same to the denominator, and vice versa.

Converting

Decimal	Percentage	Fraction
0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.75	75%	$\frac{3}{4}$
0.2	20%	$\frac{1}{5}$
0.1	10%	$\frac{1}{10}$
$0.\dot{3}$	$33.\dot{3}\%$	$\frac{1}{3}$

Mixed number → Improper fraction

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

There are 3 thirds in 1.

So there are $2 \times 3 = 6$ thirds in **2**.

We also have an extra **2** thirds, so add this on.

In total, $2 \times 3 + 2$ thirds 8 thirds altogether

Multiplying and Dividing by 10, 100 and 1000

$$6.74 \times 10 = ?$$

If you multiply a number by 10, the digits move one place value to the left.

Hundreds	Tens	Ones	Tenths	Hundredths
		6 .	7	4

Hundreds	Tens	Ones	Tenths	Hundredths
	6	7 .	4	

$$6.74 \times 10 = 67.4$$

Multiplying

X 10	digits move LEFT **1** space
X 100	digits move LEFT **2** spaces
X 1000	digits move LEFT **3** spaces

Dividing

÷ 10	digits move RIGHT **1** space
÷ 100	digits move RIGHT **2** spaces
÷ 1000	digits move RIGHT **3** spaces

The first thing to remember is "**of**" means **multiply** in mathematics.

of = x

¾ x 60 *means* What is ¾ of 60 ?

10% x 450 *means* What is 10% of 450?

Adding and Subtracting Fractions

$$\frac{2}{5} + \frac{3}{4} = \frac{8}{20} + \frac{15}{20} = \frac{23}{20} = 1\frac{3}{20}$$

(x4) (x5) — Change to a mixed number

Find a **COMMON DENOMINATOR** then ADD or SUBTRACT the numerator

Multiply Fractions →

$$\frac{2}{4} \times \frac{3}{6} = \frac{6}{24}$$

Multiply the numerators. Multiply the denominators.

Divide Fractions

$$\frac{3}{4} \div \frac{1}{3} \longrightarrow \frac{3}{4} \times \frac{3}{1}$$

Keep — Flip — Change

Created by @LittleMiss_Reed

USE DOUBLES

Threes — **X3**
DOUBLE THEN ADD ONE SET
7 x 2 =14
7 X 3 = 14 +7 = 21

Fours — **X4**
DOUBLE then DOUBLE again
4 x 8
8 16 32

Sixes — **X6**
DOUBLE the 3 times tables
3 x 5 = 15
6 x 5 = 30

Eights — **X8**
DOUBLE 3 times
8 x 7
7 14 28 56

USE THE FIVES

Sixes — **X6**
TIMES BY 5
THEN ADD ONE MORE SET
5 x 9 =45
6 x 9 = 45 +9 = 54

Sevens — **X7**
TIMES BY 5
THEN ADD TWO MORE SETS
5 x 6 =30
7 x 6 = 30 + 6 +6 = 42

TIMES TABLES CHEAT SHEET
www.mathsinsider.com

USE THE TENS

Nines — **X9**
TIMES BY 10
THEN SUBTRACT ONE SET
7 X 10 = 70
7 X 9 = 70 - 9 = 63

Eights — **X8**
TIMES BY 10
THEN SUBTRACT TWO SETS
7 X 10 = 70
7 X 8 = 70 - 9 - 9 = 56

Twelves — **X12**
TIMES BY 10
THEN ADD TWO SETS
3 X 10 = 30
3 X 12 = 30 + 3 + 3 =36

Fives — **X5**
TIMES BY 10
THEN HALVE IT
8 X 10 =80
8 x 5 = Half of 80 which is 40

Multiplying by a decimal

Use place value knowledge to help you to multiply by decimals.

e.g. 0.3×6

Compare this with the calculation 3×6

$3 \times 6 = 18$
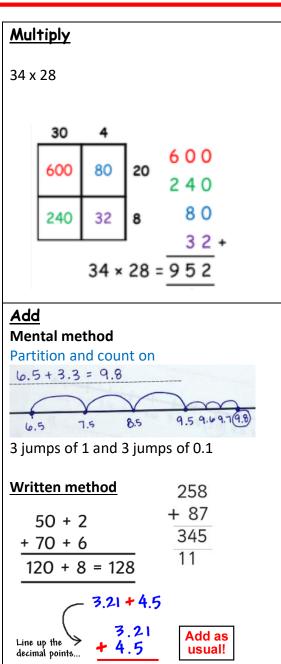$\div 10$ $\div 10$
$0.3 \times 6 = 1.8$

To get from 3 to 0.3, we divide by 10. 0.3 is 10 times smaller than 3. This means that the answer will also be 10 times smaller (18 ÷ 10 = 1.8).

e.g. 0.4×0.2
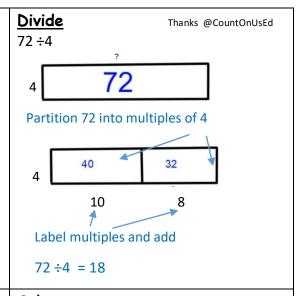
Compare this with the calculation 4×2

$4 \times 2 = 8$
$\div 10$ $\div 10$ $\div 100$
$0.4 \times 0.2 = 0.08$

0.4 is 10 times smaller than 4.
0.2 is 10 times smaller than 2.

So the answer will be 100 times smaller (8 ÷ 100 = 0.08).

Multiply

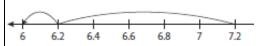Thanks @CountOnUsEd

34×28

	30	4	
20	600	80	
8	240	32	

600
240
80
32 +

$34 \times 28 = 952$

Divide

$72 \div 4$

4 | 72 | ?

Partition 72 into multiples of 4

4 | 40 | 32
   10   8

Label multiples and add

$72 \div 4 = 18$

Add
Mental method
Partition and count on

$6.5 + 3.3 = 9.8$

6.5   7.5   8.5   9.5 9.6 9.7 (9.8)

3 jumps of 1 and 3 jumps of 0.1

Written method

50 + 2
+ 70 + 6
120 + 8 = 128

258
+ 87
345
11

$3.21 + 4.5$
Line up the decimal points...
3.21
+ 4.5
7.71
and just drag that decimal point straight down!

Add as usual!

Subtract
Mental method
Partition and count back
$7.2 - 1.2 = 6$

6   6.2   6.4   6.6   6.8   7   7.2

1 jump of 1 and 1 jump of 0.2

Written method

$942 - 214$ *Expanded method*
Compact Method

    30 12
900 40   2
- 200 10   4
  700 20   8

   3 12
   942
- 214
   728

Remember to line up the decimal point if there is one!

Created by @LittleMiss_Reed

Give remainders as a fraction:

divisor = denominator

List Multiples
Divide
Multiply
Subtract
Bring Down
Repeat

| 6 |
| 12 |
| 18 |
| 24 |
| 30 |
| 36 |

$$023\frac{1}{6}$$

$$6\overline{)139}$$
$$\underline{-0}$$
$$13$$
$$\underline{-12}$$
$$19$$
$$\underline{-18}$$

remainder = numerator ①

286
x 29
─────
2574 (9 x 286)
5720 (20 x 286)
─────
8294
1