

SOLVING EQUATIONS

Key Concept

Inverse Operations

| Operation | Inverse |
|-----------|------------|
| + | - |
| - | + |
| x | ÷ |
| ÷ | x |
| x^2 | \sqrt{x} |

Key Words

Unknown: A letter which represents a number we do not know the value of.

Terms: The numbers and letters in the expression or equation.

Inverse: The operation which will do the opposite.

Examples

| | | | |
|--|--|--|--|
| $x + 9 = 16$ $-9 \quad -9$ $x = 7$ | $x - 12 = 20$ $+12 \quad +12$ $x = 32$ | $\frac{x}{3} = 5$ $\times 3 \quad \times 3$ $x = 15$ | $2x + 5 = 14$ $-5 \quad -5$ $2x = 9$ $\div 2 \quad \div 2$ $x = 4.5$ |
|--|--|--|--|

| | | |
|--|---|--|
| $\frac{x}{4} - 2 = 4$ $+2 \quad +2$ $\frac{x}{4} = 6$ $\times 4 \quad \times 4$ $x = 24$ | $2(3x + 5) = -14$ expand $6x + 10 = -14$ $-10 \quad -10$ $6x = -24$ $\div 6 \quad \div 6$ $x = -4$ | $2x + 7 = 5x + 1$ $-2x$ (smallest x term) $+7 = 3x + 1$ $-1 \quad -1$ $6 = 3x$ $\div 3 \quad \div 3$ $2 = x$ |
|--|---|--|

sparx

M707, M509,
M554

Tip

Answers can be:

- Integers
- Decimals
- Fractions
- negatives

Questions

1) $x + 8 = 19$

2) $y - 25 = 15$

3) $2y = 82$

4) $\frac{t}{4} = 7$

5) $\frac{p}{2} - 6 = 2$

6) $3(2x - 3) = 15$

7) $4x - 8 = 2x + 1$

ANSWERS: 1) $x = 11$, 2) $y = 40$, 3) $y = 41$, 4) $t = 28$, 5) $p = 16$, 6) $x = 4$, 7) $x = 4.5$

FACTORS, MULTIPLES AND PRIMES

Key Concept

Factors:

Find these in pairs

12
1, 12
2, 6
3, 4

Multiples:

Start with the number itself

7 – 7, 14, 21, 28, ...

Key Words

Factor: The numbers which fit into a number exactly.

Multiple: The numbers in the times table.

Prime: Numbers which have only two factors which are 1 and itself.

Highest Common Factor: The highest factor which is common for both numbers.

Lowest Common Multiple: The smallest multiple which is common to both numbers.

Examples

Lowest Common Multiple (LCM)

Q - Find the LCM of 6 and 7:

6 – 6, 12, 18, 24, 30, 36, **42**, 48, 54, 60, ...

7 – 7, 14, 21, 28, 35, **42**, 49, 56, ...

LCM = 42

Highest Common Factor (HCF)

Q – Find the HCF of 18 and 24

18 – 1, 2, 3, **6**, 9, 18

24 – 1, 2, 3, 4, **6**, 8, 12, 24

HCF = 6

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M462

M823

M322

Tip

There is only one even prime number which is the number 2. This can be used to help solve lots of problems.

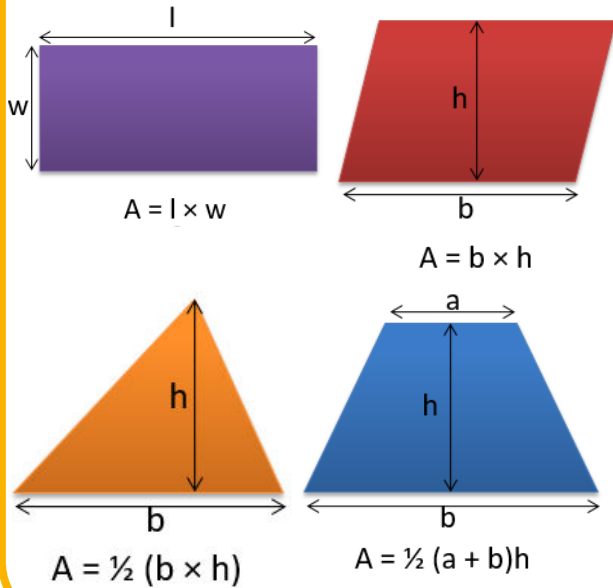
Questions

- 1) List the first 5 multiples of: a) 7 b) 12 c) 50
- 2) List the factors of: a) 12 b) 15 c) 16
- 3) a) Find the LCM of 5 and 7 b) Find the HCF of 20 and 16

ANSWERS: 1) a) 7, 14, 21, 28, 35 b) 12, 24, 36, 48, 60 c) 50, 100, 150, 200, 250
2) a) 1, 2, 3, 4, 6, 12 b) 1, 3, 5, 15 c) 1, 2, 4, 8, 16 3) a) 35 b) 4

AREA AND PERIMETER

Key Concepts Area



Key Words

Area: The amount of square units that fit inside the shape.

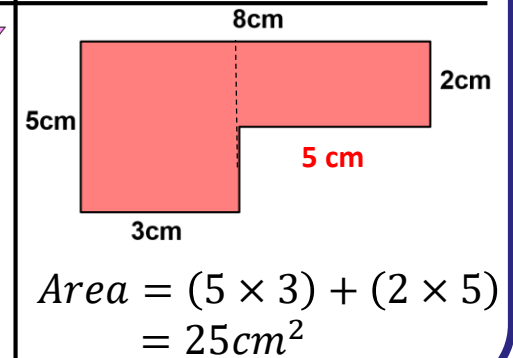
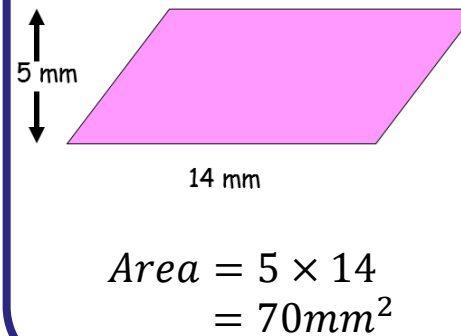
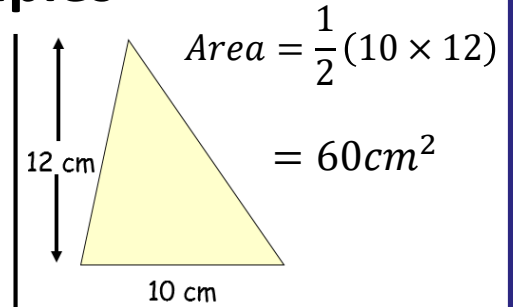
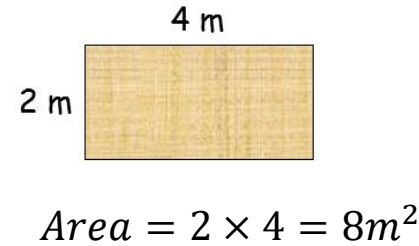
Perimeter: The distance around the outside of the shape.

Dimensions: The lengths which give the size of the shape.

Shapes:

Rectangle, Triangle, Parallelogram, Trapezium, Kite.

Examples



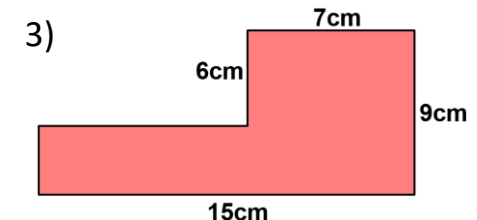
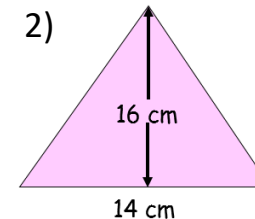
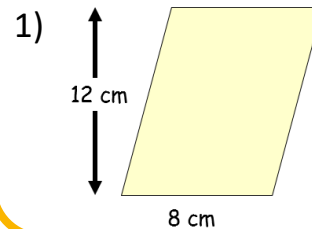
sparx

M390, M635, M269,
M291, M610, M996,
M705

Tip

Always remember units. These units are squared for area. mm^2 , cm^2 , m^2 , etc

Questions – Find the area.



ANSWERS: 1) $96 cm^2$ 2) $112 cm^2$ 3) $87 cm^2$