

# 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

$x + 9 = 16$ $-9 \quad -9$ $x = 7$	$x - 12 = 20$ $+12 \quad +12$ $x = 32$	$\frac{x}{3} = 5$ $\times 3 \quad \times 3$ $x = 15$	$2x + 5 = 14$ $-5 \quad -5$ $2x = 9$ $\div 2 \quad \div 2$ $x = 4.5$
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$\frac{x}{4} - 2 = 4$ $+2 \quad +2$ $\frac{x}{4} = 6$ $\times 4 \quad \times 4$ $x = 24$	$2(3x + 5) = -14$ <b>expand</b> $6x + 10 = -14$ $-10 \quad -10$ $6x = -24$ $\div 6 \quad \div 6$ $x = -4$	$2x + 7 = 5x + 1$ $-2x$ <b>(smallest x term)</b> $+7 = 3x + 1$ $-1 \quad -1$ $6 = 3x$ $\div 3 \quad \div 3$ $2 = x$
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# 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.

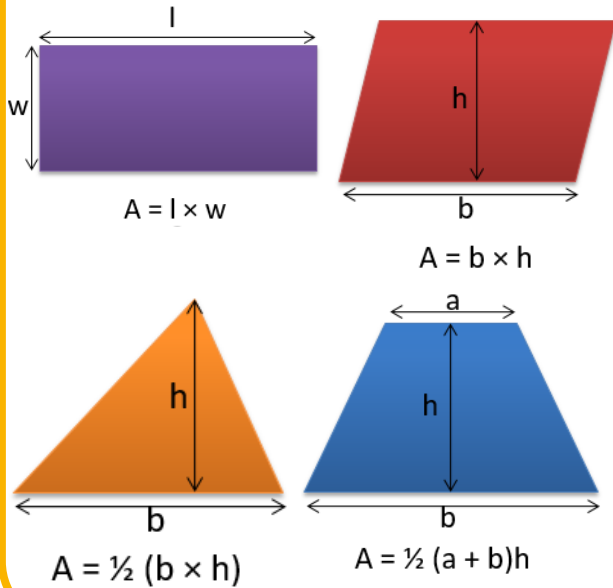
## Questions

- 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

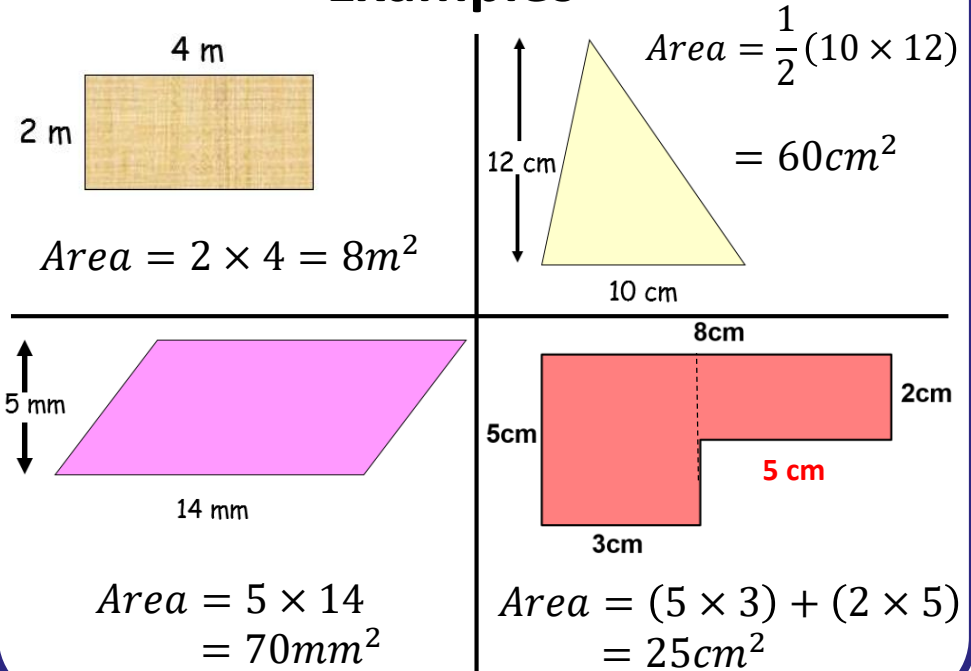
## Key Concepts Area



## 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



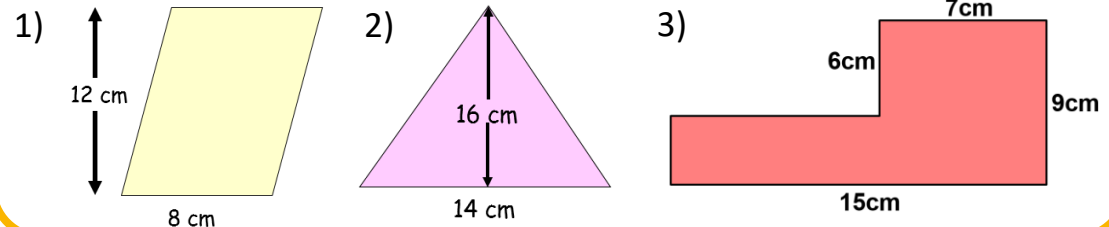
**sparx**

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)  $96\text{ cm}^2$  2)  $112\text{ cm}^2$  3)  $87\text{ cm}^2$