

# Stage 5 PROMPT sheet

## 1 Place value in numbers to 1million

The position of the digit gives its size

Millions	Hundred thousands	Ten thousands	thousands	hundreds	tens	ones
1	2	3	4	5	6	7

### Example

The value of the digit '1' is 1 000 000

The value of the digit '2' is 200 000

The value of the digit '3' is 30 000

The value of the digit '4' is 4000

## 2 Round numbers to nearest 10, 100, 1000, 10000, 100000

**Example 1-** Round 342 679 to the nearest 10 000

- Step 1 - Find the 'round-off digit' - 4
- Step 2 - Look one digit to the right of 4 - 2

5 or more? NO - leave 'round off digit' unchanged  
- Replace following digits with zeros

ANSWER - 340 000

**Example 2-** Round 453 679 to the nearest 100 000

- Step 1 - Find the 'round-off digit' - 4
- Step 2 - Look one digit to the right - 5

5 or more? YES - add one to 'round off digit'  
- Replace following digits with zeros

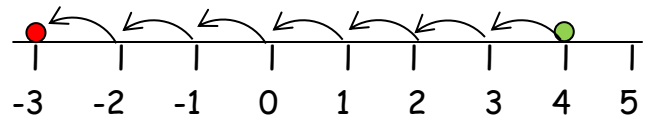
ANSWER - 500 000

## 3 Negative numbers

A number line is very useful for negative numbers.

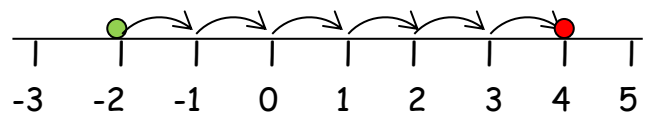
- The number line below shows:

$$4 - 7 = -3$$



- The number line below shows:

$$-2 + 6 = 4$$



## 4 Roman Numerals

The seven main symbols



I = 1

V = 5

X = 10

L = 50

C = 100

D = 500

M = 1000

Other useful ones include:

IV = 4

IX = 9

XL = 40

XC = 90

## 5 Written methods for addition

- Line up the digits in the correct columns
- Start from RIGHT to LEFT

e.g. 48 + 284 + 9

H	T	U
	4	8
2	8	4
1	2	9
3	4	1

## 5 Written methods for subtraction

- Line up the digits in the correct columns
- Start from RIGHT to LEFT

e.g. 645 - 427

H	T	U
6	4	5
4	2	7
2	1	8

## 6 Mental methods for addition

- ♦ Start from LEFT to RIGHT

Example 1 - think of:

$$45 + 32 \text{ as } 45 + 30 + 2$$

- ♦ But in your head say:

45 75 77

Example 2 - think of:

$$1236 + 415 \text{ as } 1236 + 400 + 10 + 5$$

- ♦ But in your head say:

1236 1636 1646 1651

## 6 Mental methods for subtraction

Example 1 - think of:

$$56 - 32 \text{ as } 56 - 30 - 2$$

- ♦ But in your head say:

56 26 24

Example 2 - think of:

$$1236 - 415 \text{ as } 1236 - 400 - 10 - 5$$

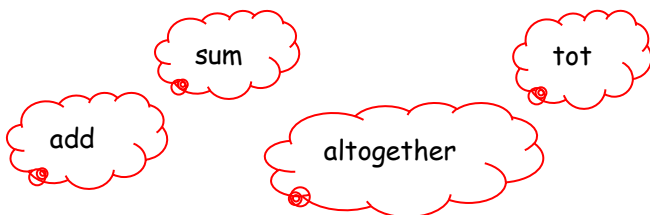
- ♦ But in your head say:

1236 836 826 821

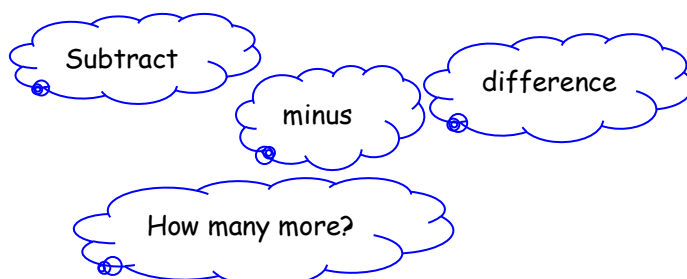
## 7 Multi-step problems

Based upon 6.

Words associated with addition:



Words associated with subtraction:



## 8 Multiples & factors

- ♦ **FACTORS** are what divides exactly into a number

e.g. Factors of 12 are:

1	12
2	6
3	4

Factors of 18 are:

1	18
2	9
3	6

The common factors of 12 & 18 are: 1, 2, 3, 6,  
The Highest Common Factor is: 6

- ♦ **MULTIPLES** are the times table answers

e.g. Multiples of 5 are:

5	10	15	20	25	.....
---	----	----	----	----	-------

Multiples of 4 are:

4	8	12	16	20	.....
---	---	----	----	----	-------

The Lowest Common Multiple of 5 and 4 is: 20

## 9 Prime numbers

Prime numbers have only TWO factors  
- 1 and itself

The factors of 12 are:

1, 2, 3, 4, 6, 12



12 is NOT prime  
It is composite

Factors of 7 are:

1, 7



7 IS prime

## Prime numbers to 20

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

The number '1' is NOT prime because it only has one number.

A **prime factor** is a factor that is a prime number so factors of 15 are 1, 3, 5, 15. The prime factors are 3 and 5.

## 10 Multiplication using a formal method

### ♦ By a ONE-DIGIT number

e.g.  $3561 \times 7$       COLUMN METHOD

$$\begin{array}{r} 3561 \\ \underline{7 \times} \\ 24927 \\ \text{34} \end{array}$$

e.g.  $3567 \times 7$       GRID METHOD

	3000	500	60	7
7	21000	3500	420	49

$$21000 + 3500 + 420 + 49 = 24927$$

### ♦ By a TWO-DIGIT number

e.g.  $152 \times 34$       COLUMN METHOD

$$\begin{array}{r} 152 \\ \underline{34 \times} \\ 608 \quad (\times 4) \\ 4560 \quad (\times 30) \\ \hline \mathbf{5168} \end{array}$$

e.g.  $152 \times 34$       GRID METHOD

	100	50	2
30	<b>3000</b>	<b>1500</b>	<b>60</b>
4	<b>400</b>	<b>200</b>	<b>8</b>

$$152 \times 34 = 3400 + 1700 + 68 = \mathbf{5168}$$

## 10 Division using a formal method

### ♦ By a ONE-DIGIT number

e.g.  $9138 \div 6$       
$$\begin{array}{r} 1523 \\ 6 \overline{)9138} \end{array}$$

### ♦ By a TWO-DIGIT number

e.g.  $4928 \div 32$       SAME METHOD

(Except write down some of your tables down first)

$$\begin{array}{r} 32 \\ 64 \\ 96 \\ 128 \\ 160 \\ \hline 0154 \\ 32 \overline{)4928} \end{array}$$

$$4928 \div 32 = \mathbf{154}$$

e.g.  $4928 \div 32$       ALTERNATE METHOD

- ♦ Divide
- ♦ Multiply
- ♦ Subtract
- ♦ Bring down - Make a new number
- ♦ Divide ...

$$\begin{array}{r} 0154 \\ 32 \overline{)4928} \\ \underline{-32} \quad \downarrow \\ 172 \\ \underline{-160} \quad \downarrow \\ 128 \\ \underline{-128} \\ 000 \end{array}$$

$$4928 \div 32 = \mathbf{154}$$

## 11 Multiply & divide by 10, 100, 1000

### ♦ **By moving the digits**

To multiply by 10 move the digits ONE place LEFT

TO.th

e.g.

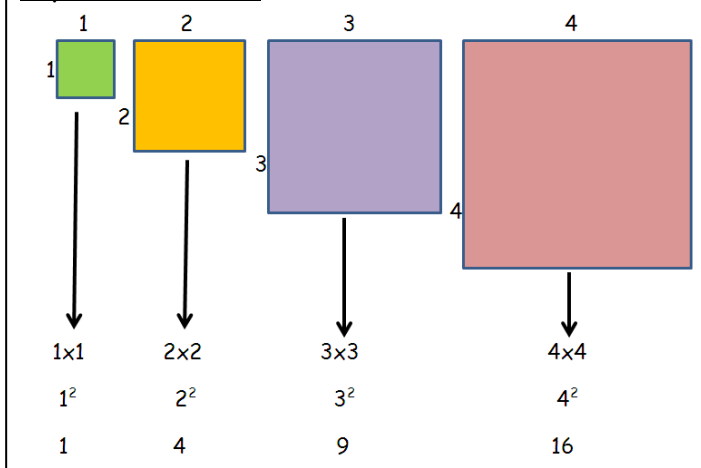
$$\begin{array}{r} 3.52 \times 10 \\ \swarrow \searrow \\ = 35.2 \end{array}$$

To multiply or divide by 100 move TWO places

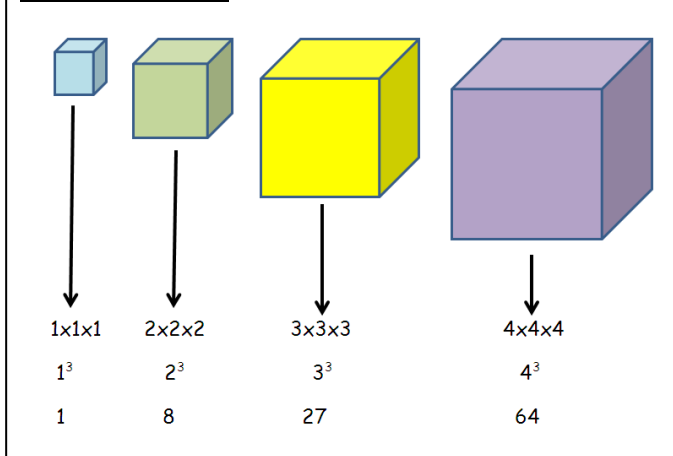
To multiply or divide by 1000 move THREE places

## 12 Square & Cube numbers

### Square numbers



### Cube numbers



## 13 Fractions

- ♦ To compare fractions  
- the denominators must be the same

$$\frac{2}{3} \text{ and } \frac{5}{6} \longrightarrow \text{ 😬 }$$

✗

$$\frac{4}{6} \text{ and } \frac{5}{6} \longrightarrow \text{ 😄 }$$

SO  $\frac{5}{6}$  is bigger than  $\frac{2}{3}$

- ♦ To add and subtract fractions

### **When the denominators are the same**

$$\frac{5}{8} + \frac{1}{8} = \frac{6}{8}$$

Do not add  
the denominators

$$\frac{5}{8} - \frac{1}{8} = \frac{4}{8}$$

Do not subtract  
the denominators

### **When the denominators are different**

$$\frac{3}{8} + \frac{1}{4^{(x2)}}$$

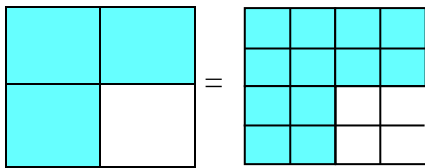
$$\downarrow$$

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

Multiply to make  
the denominators  
the same

## 14 Equivalent fractions

These fractions are the same but can be drawn and written in different ways



$$\frac{3}{4} = \frac{12}{16}$$

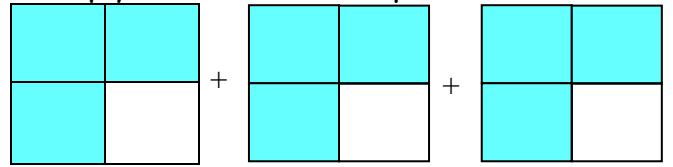
$$\frac{3^{(x4)}}{4^{(x4)}} = \frac{12}{16}$$

Fractions can also be divided to make the fraction look simpler - this is called **CANCELLING** or **LOWEST FORM**

$$\frac{12^{(\div 4)}}{16^{(\div 4)}} = \frac{3}{4}$$

## 16 Multiply fractions

Multiply is the same as repeated addition



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

$$\frac{3}{4} \times 3 = \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$$

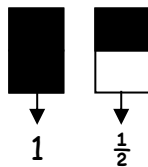
OR

$$\frac{3}{4} \times \frac{3}{1} = \frac{9}{4} = 2\frac{1}{4}$$

## 15 Mixed & improper fractions

- An improper fraction is top heavy & can be changed into a mixed number

$\frac{3}{2}$  can be shown in a diagram



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

Improper fraction

Mixed number

- A mixed number can be changed back into an improper fraction

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

$\frac{\text{Whole number} \times \text{denominator} + \text{numerator}}{\text{denominator}}$

$$2\frac{3}{4} = \frac{11}{4}$$

## 17 Round decimals

Rules for rounding

- Find the 'round off' digit
- Move one digit to its right
- Is this digit 5 or more  
Yes - add one to the round off digit  
No - don't change the round off digit

- To the nearest whole number

e.g. 1 - To round 5.62 to the nearest whole

'round off' digit

this digit is 5 or more

5.62 rounded to nearest whole = 6

e.g. 2 - To round 5.32 to the nearest whole

'round off' digit

this digit is NOT 5 or more

5.32 rounded to nearest whole = 5

## Rounding decimals continued

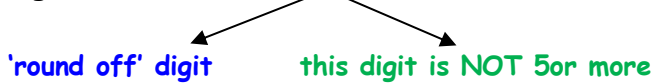
### ♦ To one decimal place

e.g. 1 - To round 12.**37** to 1 decimal place



12.37 rounded to 1dp = 12.4

e.g. 2 - To round 12.**32** to the nearest whole



12.37 rounded to 1dp = 12.3

## 18 Read & write decimals

The value of each digit is shown in the table

hundreds	tens	ones	•	tenths	hundredths	thousandths
3	5	2	•	6	1	7
300	50	2		$\frac{6}{10}$	$\frac{1}{100}$	$\frac{7}{1000}$
352					$\frac{61}{100}$	$\frac{7}{1000}$
352					$\frac{617}{1000}$	

$$0.71 = \frac{71}{100}$$

$$0.4 = \frac{4}{10}$$

$$0.29 = \frac{29}{100}$$

$$1.48 = 1 \frac{48}{100}$$

## 18 Order decimals

Example - To order 0.28, 0.3, 0.216

- ♦ Write them under each other
- ♦ **Fill gaps with zeros**
- ♦ Then order them - start from the left comparing the digits

♦

0.28	→	0.280
0.3	→	0.300
0.216	→	0.216

smallest largest

Order: 0.216 0.28 0.3

## 19 Decimal & Percentage equivalents

### Learn

Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{1}{5}$	0.2	20%
$\frac{1}{10}$	0.1	10%
$\frac{1}{100}$	0.01	1%

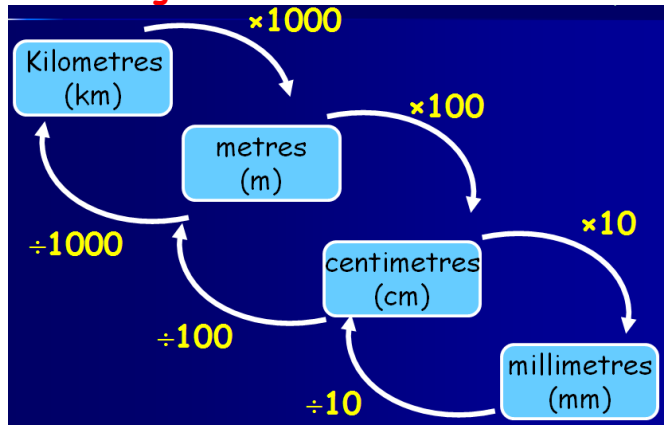
Some fractions have to be changed to be 'out of 100'

$$\frac{11}{25} \begin{matrix} (\times 4) \\ (\times 4) \end{matrix} = \frac{44}{100} = 0.44 = 44\%$$

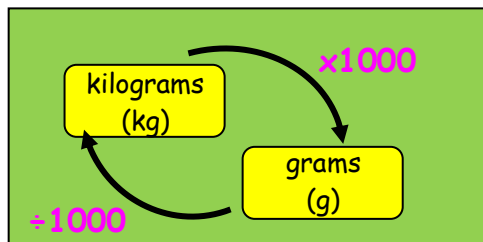
$$\frac{3}{5} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{6}{10} = 0.6 = 60\%$$

## 20 Convert metric measure

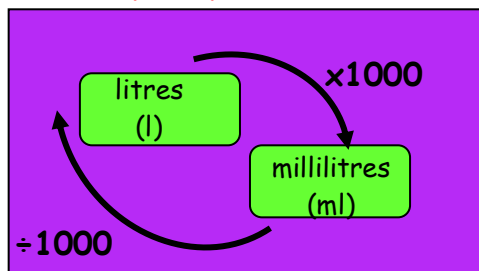
### ◆ Length



### ◆ Mass or weight



### ◆ Capacity or volume



- ◆ A litres of water's a pint and three quarters

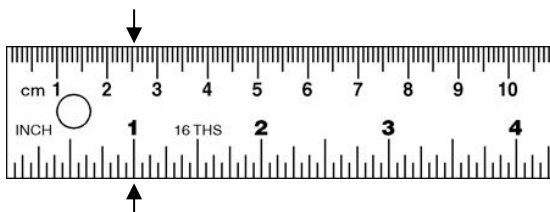


- ◆ A gallon is about 4.5 litres



## 20 Imperial measure

- ◆ 1 inch is about 2.5cm



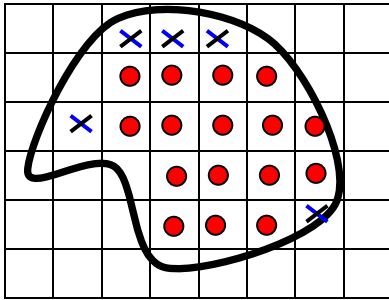
- ◆ 1km = 1.6 miles or 5miles = 8km

- ◆ 1kg is about 2.2pounds



## 21 Area & Perimeter

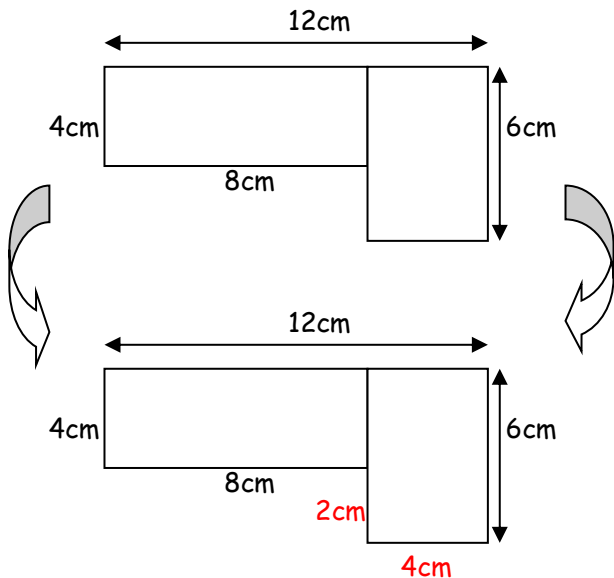
### Estimate area



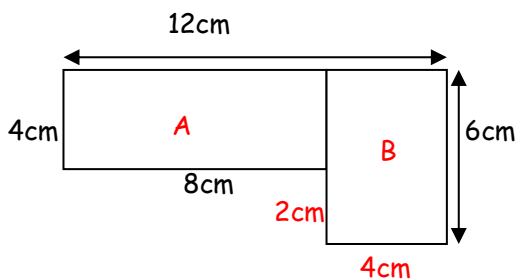
Number of whole squares (●) = 16  
 Number of  $\frac{1}{2}$  or more (×) = 5  
Estimated area = 21 squares

### Shapes composed of rectangles

Put on all missing lengths first  
 For perimeter - ADD all lengths round outside  
 For area - split into rectangles & add them together



Perimeter = 12 + 6 + 4 + 2 + 8 + 4 = 36cm

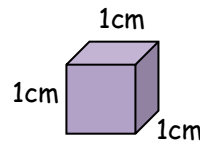


Area of shape = Area of A + B  
 =  $(8 \times 4) + (6 \times 4)$   
 =  $32 + 24$   
 =  $56\text{cm}^2$

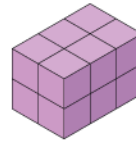
## 22 Volume

Volume is measured in cubes

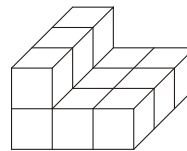
### The 1 cm cube



The volume of this cube is  $1\text{ cm}^3$   
 (1 cubic centimetre)  
**It holds 1ml of water**



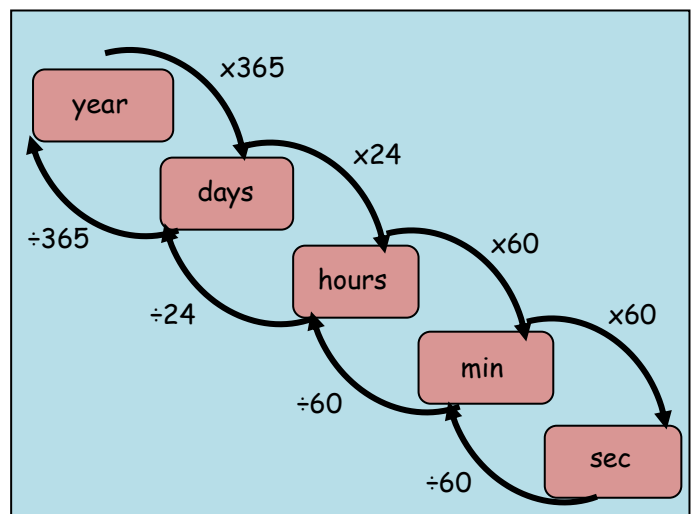
This cuboid contains 12 cubes  
 So the volume is  $12\text{ cm}^3$



This 3D shape contains 12 cubes  
 So the volume is  $12\text{ cm}^3$

## 23 Units of time

### Time conversion



### Time intervals

Always go to the next whole hour first

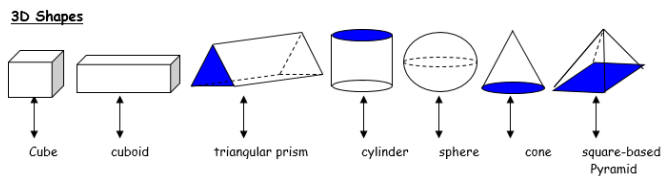
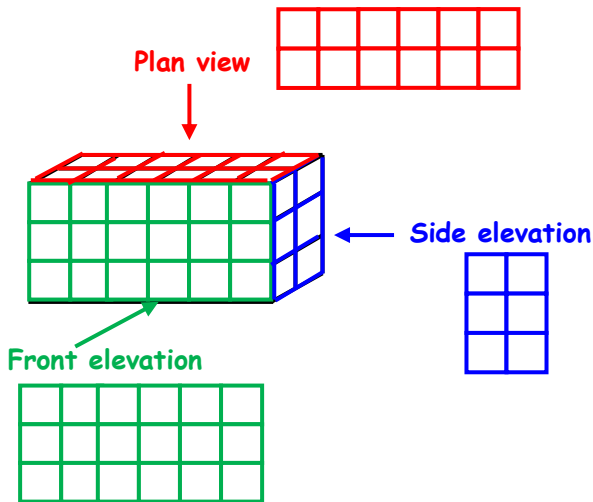
Example: 0830 to 1125

$30\text{min} + 2\text{h } 25\text{min} = 2\text{h } 55\text{min}$

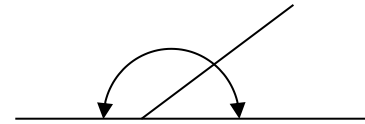


## 24 2D representations of 3D shapes

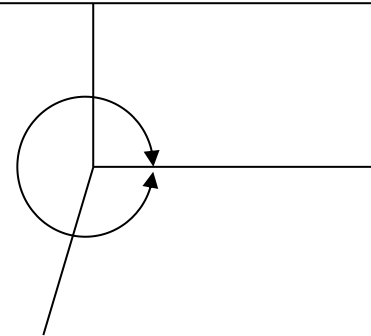
- There are 3 views:



To be sure, count the number of degrees between the two arms of the angle



Angles on a straight line add up to  $180^\circ$  or 2 right angles ( $2 \times 90^\circ$ )

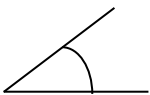


Angles about a point add up to  $360^\circ$  or 4 right angles ( $4 \times 90^\circ$ )

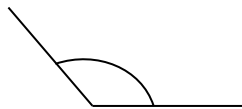
## 25 Angles

- Types of angles

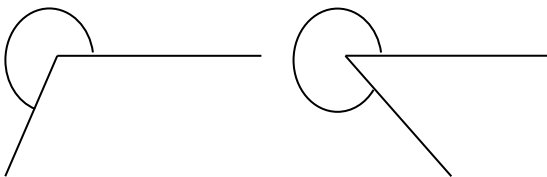
**Acute**  
(less than  $90^\circ$ )



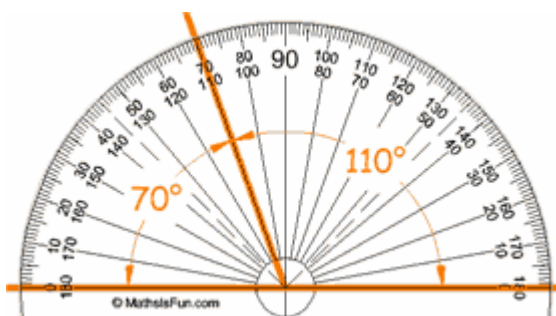
**Obtuse**  
(Between  $90^\circ$  &  $180^\circ$ )



**Reflex**  
(Between  $180^\circ$  &  $360^\circ$ )



- Measure and draw angles

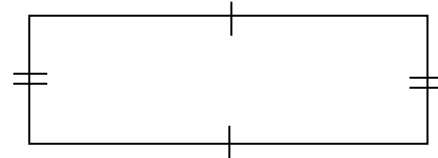


## 26 Properties of the rectangle

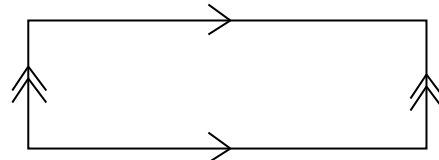
- A rectangle is a quadrilateral (4 sided shape)
- All angles are  $90^\circ$



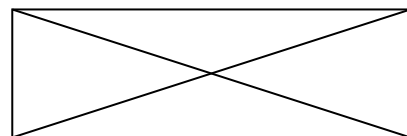
- Opposite sides are equal



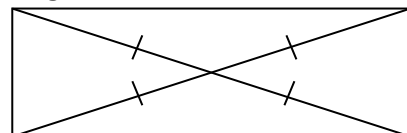
- Opposite sides are parallel



- Diagonals are equal



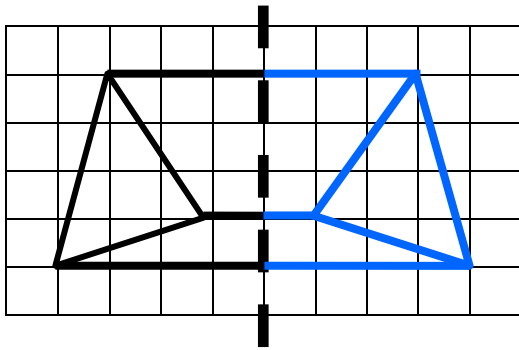
- Diagonals bisect each other (cut in half)



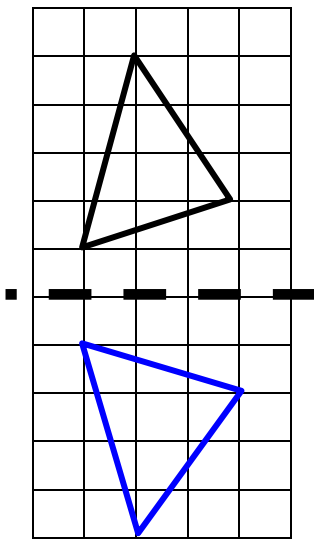
- A square is a special rectangle

## 27 Reflection

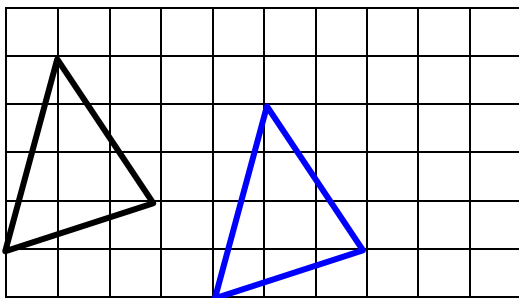
### ◆ Reflection in a vertical line



### ◆ Reflection in a horizontal line



## 28 Translation - 4 right & 1 down



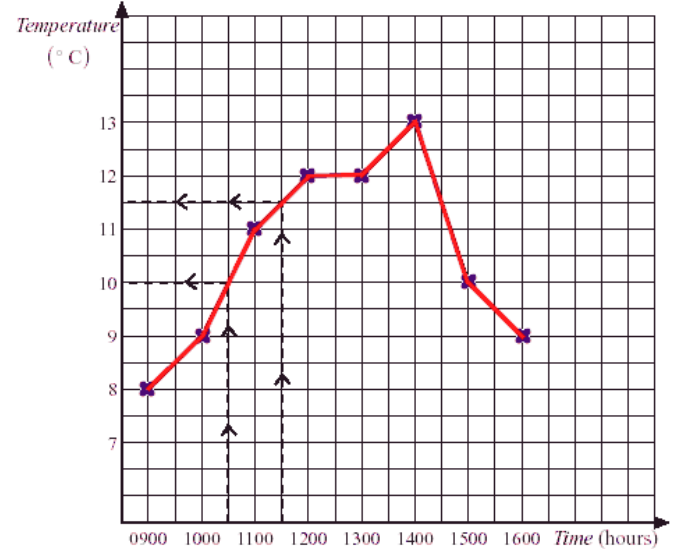
- ◆ In reflection and translation the shapes remain the same size and shape - CONGRUENT
- ◆ In reflection the shape is flipped over
- ◆ In translation the shape stays the same way up

## 29 Line graphs

### ◆ Find the difference

Example 1: What was the difference in temperature between 1030 and 1130?

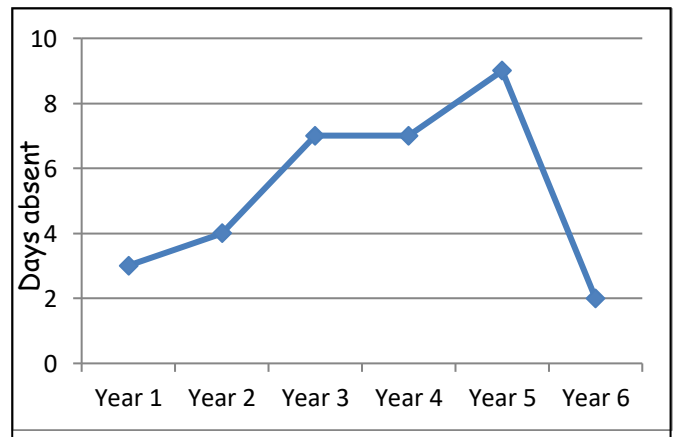
Answer:  $11.5^{\circ}\text{C} - 10^{\circ}\text{C} = 1.5^{\circ}\text{C}$



### ◆ Find the sum of the data

Example: What was the total number of days absent over the 6 years?

Answer:  $3 + 4 + 7 + 7 + 9 + 2 = 32$  days



### 30 Interpret information in tables

#### ♦ Distance table

Example: Find the distance between **Leeds** and **York**

Answer: 40 miles

Hull				
100	<b>Leeds</b>			
162	73	Manchester		
110	60	65	Sheffield	
63	40	118	95	<b>York</b>

#### ♦ Timetable

Example: How long is the film?

Answer:  $1.10 - 2.35 = 1\text{h } 25\text{min} = 85\text{min}$

6.30am	Educational programme
7.00	Cartoons
7.25	News and weather
8.00	Wildlife programme
9.00	Children's programme
11.30	Music programme
12.30pm	Sports programme
1.00	News and weather
1.10 - 2.35pm	Film

#### ♦ Table of results of goals scored

Example: Did boys or girls score the most goals?

Answer: Boys:  $6+3+3+6=18$

Girls:  $7+5=12$

Boys scored the most goals

	Game 1	Game 2	Game 3	Game 4	Game 5	Frequency
Peter	1	0	0	2	3	6
John	0	2	1	0	0	3
Ryan	1	0	1	1	0	3
Claire	2	0	2	1	2	7
Bill	3	1	1	0	1	6
Susan	0	1	3	1	0	5