

# Year 5 (2023-24)

## Maths The Year Ahead...

The following information booklet details the general plan for teaching and learning in the coming academic year at HHJS. We follow the White Rose Scheme of learning which is attached for your information. I have also included some extra resources you may find useful at home for pre-teaching or consolidation.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number <b>Place value</b> <a href="#">VIEW</a>			Number <b>Addition and subtraction</b> <a href="#">VIEW</a>		Number <b>Multiplication and division A</b> <a href="#">VIEW</a>		Number <b>Fractions A</b> <a href="#">VIEW</a>				
Spring term	Number <b>Multiplication and division B</b> <a href="#">VIEW</a>			Number <b>Fractions B</b> <a href="#">VIEW</a>		Number <b>Decimals and percentages</b> <a href="#">VIEW</a>		Measurement <b>Perimeter and area</b> <a href="#">VIEW</a>		Statistics <a href="#">VIEW</a>		
Summer term	Geometry <b>Shape</b> <a href="#">VIEW</a>			Geometry <b>Position and direction</b> <a href="#">VIEW</a>		Number <b>Decimals</b> <a href="#">VIEW</a>		Number <b>Negative numbers</b> <a href="#">VIEW</a>	Measurement <b>Converting units</b> <a href="#">VIEW</a>		Measurement <b>Volume</b> <a href="#">VIEW</a>	

\*\* These booklets are available on the website for all KS1 and 2 year groups across our federation.

For more information speak to Miss Duffy (year 4 @HHJS)






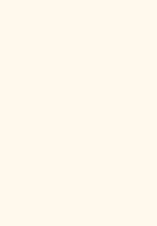
## Useful resources

White Rose's **free workbooks** align with the topics we will cover.

- Available for **all topics** across the year.

<https://whiterosemaths.com/parent-resources>


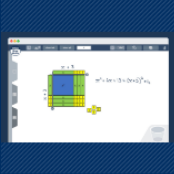

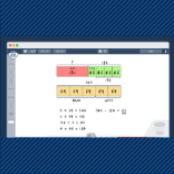
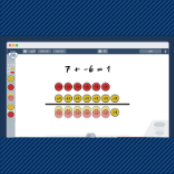
### Get the free workbooks

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					
Autumn Block 1 <b>Place value</b>	Autumn Block 2 <b>Addition and subtraction</b>	Autumn Block 3 <b>Statistics</b>	Autumn Block 4 <b>Multiplication and division</b>	Autumn Block 5 <b>Perimeter and area</b>	

**Free digital tools** - these match the representations used in class and align with our mastery approach, by *bringing the maths to life*.

<https://whiterosemaths.com/resources/digital-tools>

### Free digital tools

				
Place value chart	Algebra tiles	Rekenrek	Bar model	Double-sided counters

# Stage 5 PROMPT sheet

## 5/1 Place value in numbers to 1million

The position of the digit gives its size

Millions	Hundred thousands	Ten thousands	thousands	hundreds	tens	units
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

## 5/2 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

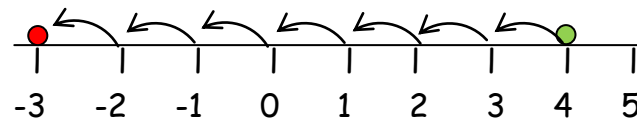
ANSWER - 500 000

## 5/3 Negative numbers

A number line is very useful for negative numbers.

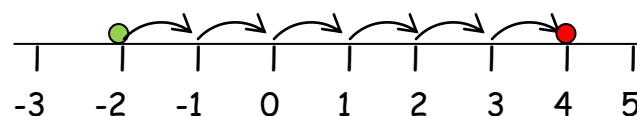
- The number line below shows:

$$4 - 7 = -3$$



- The number line below shows:

$$-2 + 6 = 4$$



## 5/4 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

## 5/5 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

## 5/5 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

## 5/6 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

## 5/6 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

## 5/7 Multi-step problems

Based upon 5/6.

**Words associated with addition:**



**Words associated with subtraction:**



## 5/8 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

## 5/9 Prime numbers

**Prime numbers have only TWO factors**

The factors of 12 are:

1, 2, 3, 4, 6, 12



12 is NOT prime  
It is composite

Factors of 7 are:

1, 7

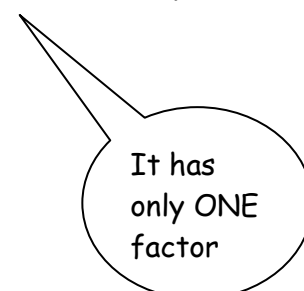


7 IS prime

## 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



## 5/10 Multiplication using a formal method

- By a **ONE-DIGIT** number

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

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

e.g.  $3561 \times 7$       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>

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

## 5/10 Division using a formal method

- By a **ONE-DIGIT** number

e.g.  $9138 \div 6$       
$$\begin{array}{r} 1526 \\ 6 \overline{)9138} \end{array}$$

- 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 ...

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

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

## 5/11 Multiply & divide by 10, 100, 1000

- By moving the decimal point

To **multiply** by 10 move the dp ONE place RIGHT

e.g.  $13 \overset{\curvearrowright}{} \times 10 = 130$

$3.4 \overset{\curvearrowright}{} \times 10 = 34$

To **divide** by 10 move the dp ONE place LEFT

e.g.  $13 \overset{\curvearrowleft}{} \div 10 = 1.3$

$3.4 \overset{\curvearrowleft}{} \div 10 = 0.34$

- By moving the digits




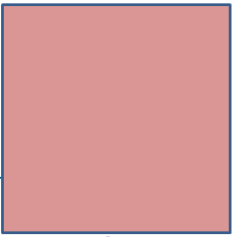
To multiply by 10 move the digits ONE place LEFT

e.g.  $3.52 \times 10 = 35.2$


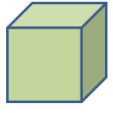
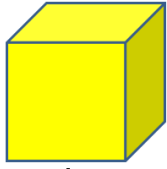
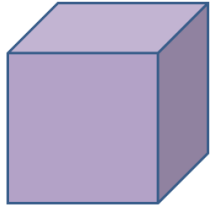
To multiply or divide by 100 move TWO places  
To multiply or divide by 1000 move THREE places

## 5/12 Square & Cube numbers

### Square numbers

1	2	3	4
			
1x1	2x2	3x3	4x4
1 <sup>2</sup>	2 <sup>2</sup>	3 <sup>2</sup>	4 <sup>2</sup>
1	4	9	16

### Cube numbers

			
1x1x1	2x2x2	3x3x3	4x4x4
1 <sup>3</sup>	2 <sup>3</sup>	3 <sup>3</sup>	4 <sup>3</sup>
1	8	27	64

## 5/13 Fractions

- To compare fractions  
- the denominators must be the same

$\frac{2}{3}$  and  $\frac{5}{6}$   $\longrightarrow$  😨

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

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

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

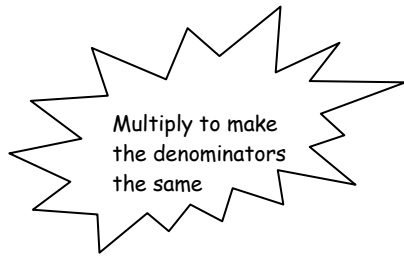
Do not subtract  
the denominators

### 5/13 To add subtract fractions (cont)

When the denominators are different

$$\frac{3}{8} + \frac{1}{4} \quad \begin{matrix} \times 2 \\ \times 2 \end{matrix}$$

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



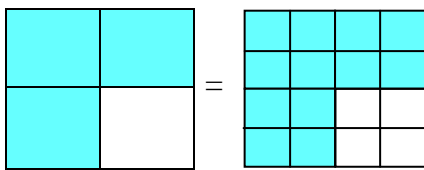
- A mixed number can be changed back into an improper fraction

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

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

### 5/14 Equivalent fractions

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



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

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

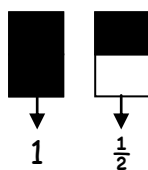
Fractions can also be divided to make the fraction look simpler - this is called **CANCELLING** or **LOWEST FORM**

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

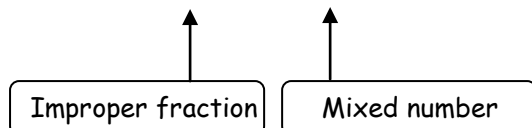
### 5/15 Mixed & improper fractions

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

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

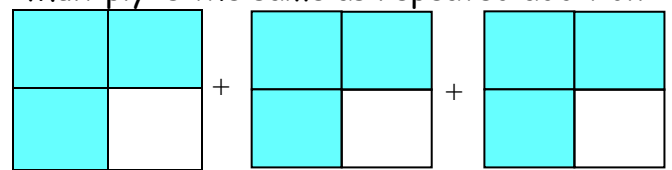


$$\frac{3}{2} = 1\frac{1}{2}$$



### 5/16 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

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





## 5/19 Decimal & Percentage equivalents

### Learn

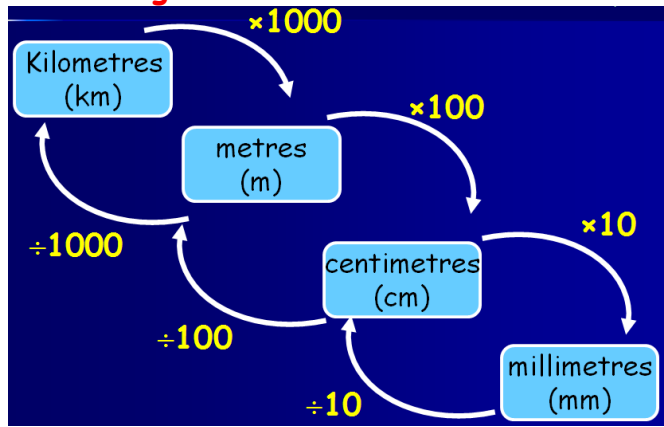
Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{1}{5}$	0.2	20%
$\frac{1}{10}$	0.1	10%
$\frac{1}{100}$	0.01	1%

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

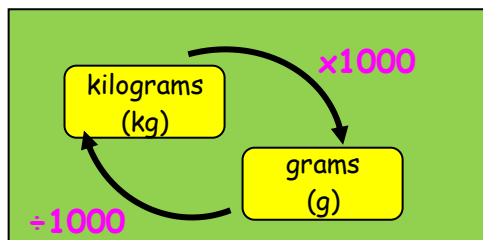
$$\frac{11}{25} \stackrel{(\times 4)}{=} \frac{44}{100} = 0.44 = 44\%$$

## 5/20 Convert metric measure

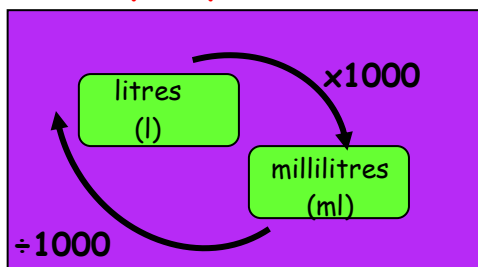
### • Length



### • Mass or weight

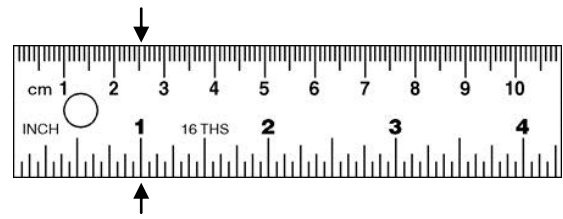


### • Capacity or volume



## 5/20 Imperial measure

- 1 inch is about 2.5cm



- 1km = 1.6 miles or 5miles = 8km

- 1kg is about 2.2pounds



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

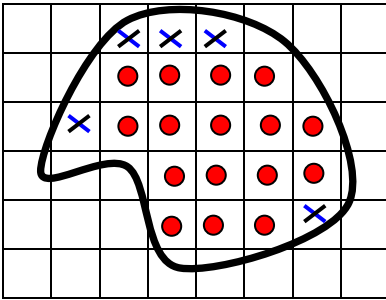


- A gallon is about 4.5 litres



## 5/21 Area & Perimeter

### • Estimate area



Number of whole squares (●) = 16

Number of  $\frac{1}{2}$  or more (×) = 5

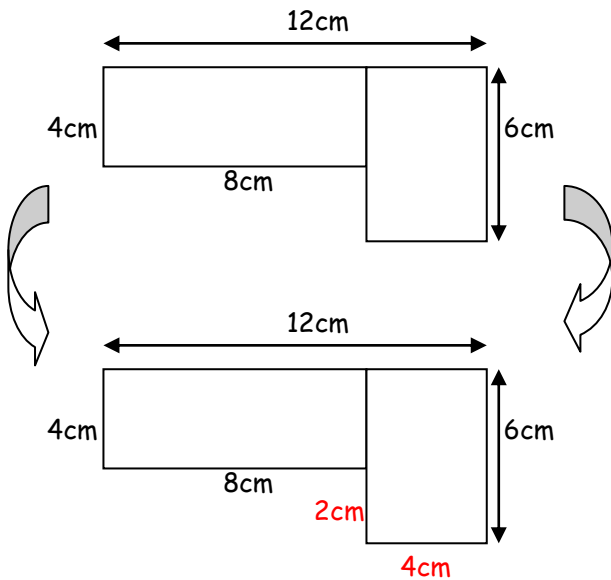
Estimated area = 21 squares

### • Shapes composed of rectangles

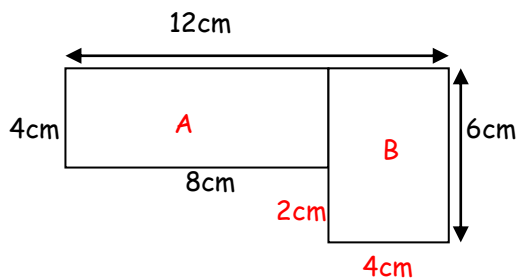
Put on all missing lengths first

For perimeter - ADD all lengths round outside

For area - split into rectangles & add them together



$$\text{Perimeter} = 12 + 6 + 4 + 2 + 8 + 4 = 36\text{cm}$$

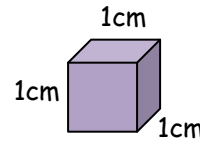


$$\begin{aligned} \text{Area of shape} &= \text{Area of A} + \text{B} \\ &= (8 \times 4) + (6 \times 4) \\ &= 32 + 24 \\ &= \underline{56\text{cm}^2} \end{aligned}$$

## 5/22 Volume

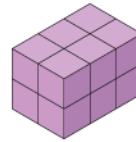
Volume is measured in cubes

### The 1 cm cube

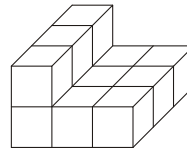


The volume of this cube is  $1\text{ cm}^3$   
(1 cubic centimetre)

**It holds 1ml of water**



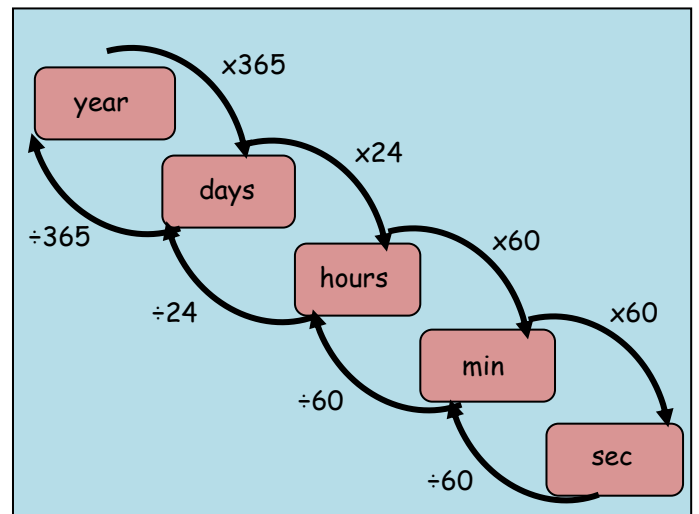
This cuboid contains 12 cubes  
So the volume is  $12\text{ cm}^3$



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

## 5/23 Units of time

### • Time conversion



### • Time intervals

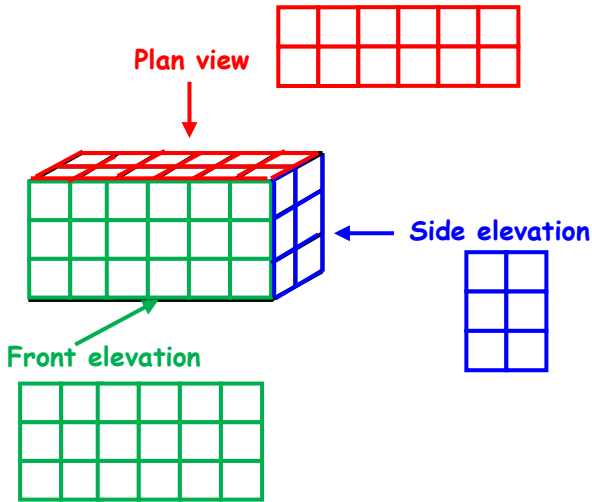
Always go to the next whole hour first

Example: 0830 to 1125

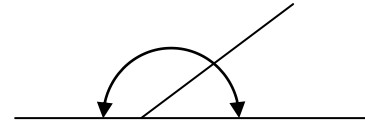
$$30\text{min} + 2\text{h } 25\text{min} = 2\text{h } 55\text{min}$$

## 5/24 2D representations of 3D shapes

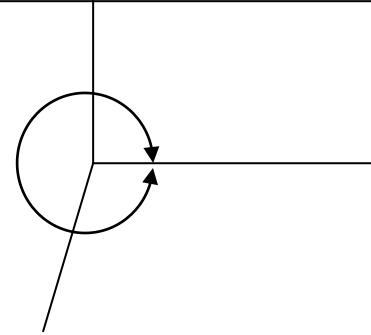
- There are 3 views:



## 5/26 Angles



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

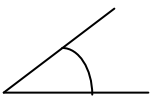


Angles about a point add up to  $360^\circ$   
or 4 right angles ( $4 \times 90^\circ$ )

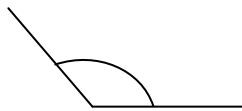
## 5/25 Angles

- Types of angles

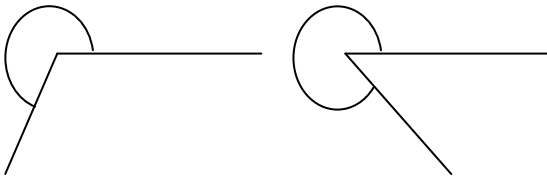
**Acute**  
(less than  $90^\circ$ )



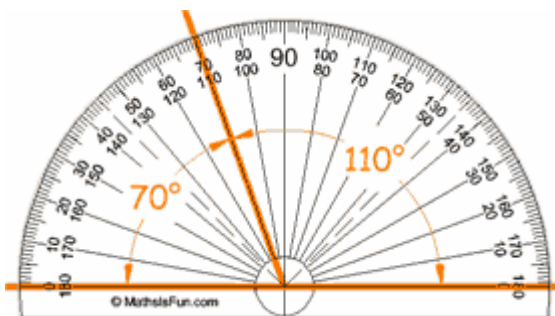
**Obtuse**  
(Between  $90^\circ$  &  $180^\circ$ )



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



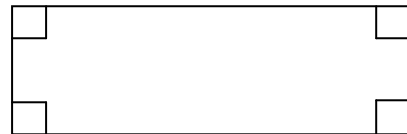
- Measure and draw angles



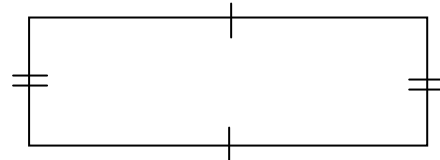
To be sure, count the number of degrees between the two arms of the angle

## 5/27 Properties of the rectangle

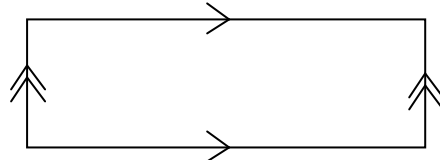
- A rectangle is a quadrilateral (4 sided shape)
- All angles are  $90^\circ$



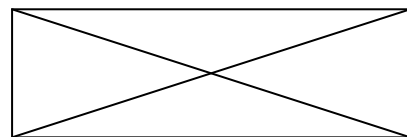
- Opposite sides are equal



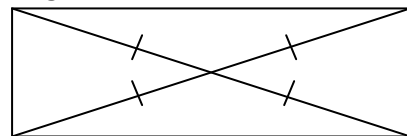
- Opposite sides are parallel



- Diagonals are equal



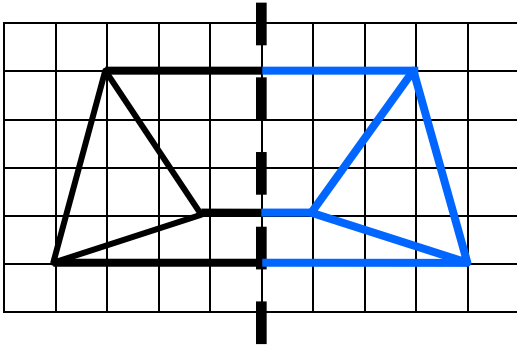
- Diagonals bisect each other (cut in half)



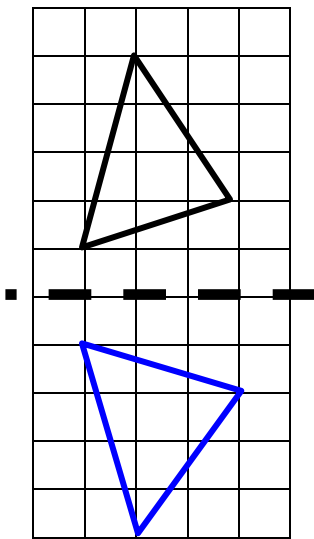
- A square is a special rectangle

## 5/28 Reflection

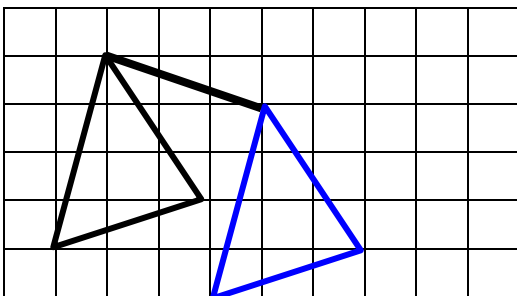
- Reflection in a vertical line



- Reflection in a horizontal line



## 5/28 Translation - 4 right & 1 down



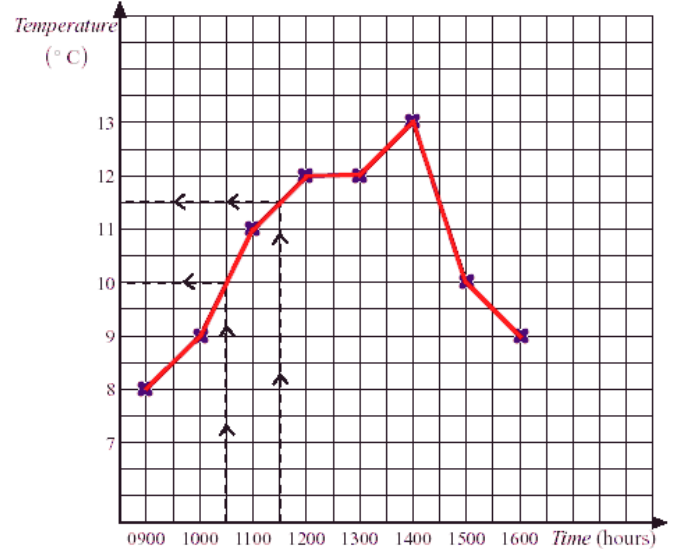
- In reflection and translation the shapes remain the same size and shape - CONGRUENT
- In reflection the shape is flipped over
- In translation the shape stays the same way up

## 5/29 Line graphs

- Find the difference

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

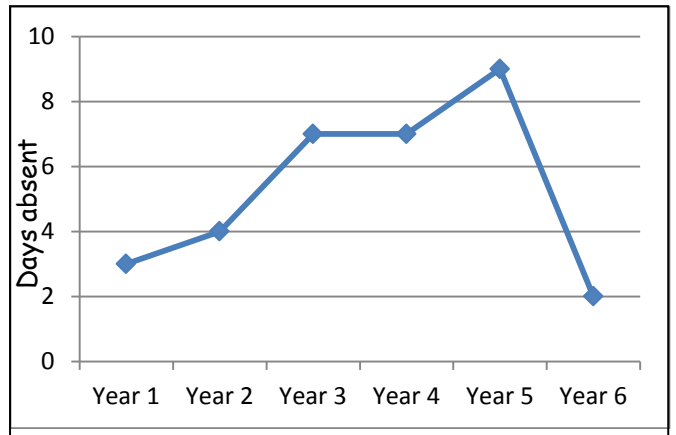
Answer:  $11.5^{\circ}\text{C} - 10^{\circ}\text{C} = 1.5^{\circ}\text{C}$



- 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



## 5/30 Interpret information in tables

- **Distance table**

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

Answer: 40miles

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