Year 5 PROMPT sheet

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

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

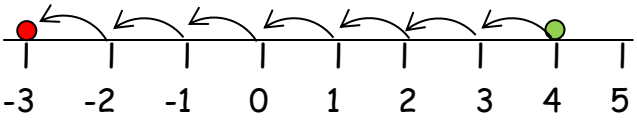
ANSWER – 500 000

Negative numbers

A number line is very useful for negative numbers.

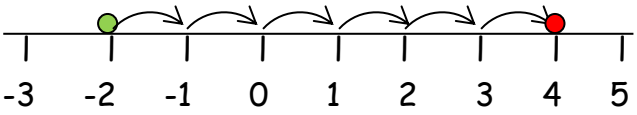
- The number line below shows:

4 – 7 = -3



- The number line below shows:

-2 + 6 = 4



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

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

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	$^{3}\not{4}$	$^{1}5$
4	2	7 -
2	1	8

Mental methods for addition

- Start from LEFT to RIGHT

Example 1 – think of:
45 + 32 as 45 + 30 + 2
- But in your head say:

45 75 77

Example 2 – think of:
1236 + 415 as 1236 + 400 + 10 + 5
- But in your head say:

1236 1636 1646 1651

Mental methods for subtraction

Example 1 – think of:
56 – 32 as 56 – 30 – 2
- But in your head say:

56 26 24

Example 2 – think of:
1236 - 415 as 1236 - 400 - 10 - 5
- But in your head say:

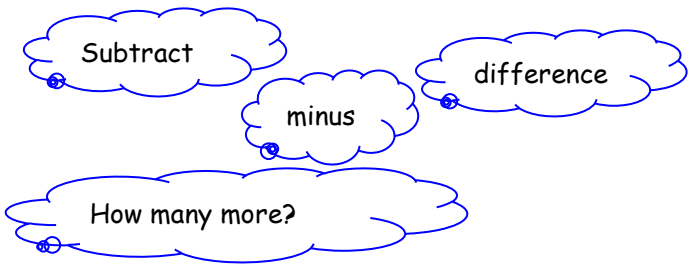
1236 836 826 821

Multi-step problems

Based upon Yrs 5/6.

Words associated with addition:

Words associated with subtraction:



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

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 30

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

The number '1' is NOT prime

It has only ONE factor

Multiplication using a formal method

- **By a ONE-DIGIT number**

e.g. 3561 x 7 **COLUMN METHOD**

```
  3561
x    7
 24927
  3 4
```

e.g. 3561 x 7 **GRID METHOD**

	3000	500	60	7
7	21000	3500	420	49

21,000 + 3,500 + 420 + 49 = 24,927

- **By a TWO-DIGIT number**

e.g. 152 x 34 **COLUMN METHOD**

```
  152
X  34
  608   (152 x 4)
 4560   (152 x 30)
 5168
```

e.g. 152 x 34 **GRID METHOD**

	100	50	2
30	3000	1500	60
4	400	200	8

152 x 34 = 3400 + 1700 + 68 = **5168**

Division using a formal method

- **By a ONE-DIGIT number**

e.g. 9138 ÷ 6

```
  1 5 2 6
6 )9 3 1 1 3 1 8
```

- **By a TWO-DIGIT number**

e.g. 4928 ÷ 32 **SAME METHOD**

(Except write down some of your tables down first)

32
64
96
128
160

```
    0  1  5  4
32 )4 4 9 17 2 12 8
```

4928 ÷ 32 = **154**

e.g. 4928 ÷ 32 **ALTERNATE METHOD**

- Divide
- Multiply
- Subtract
- Bring down - Make a new number
- Divide …

```
   0 1 5 4
32 4 9 2 8
  -3 2 ↓
   1 7 2 ↓
  -1 6 0
     1 2 8
    -1 2 8
     0 0 0
```

4928 ÷ 32 = **154**

Place Value

M	HTH	TTH	TH	H	T	U	t	h
Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units	Tenths	Hundredths

Multiply & divide by 10, 100, 1000

- **By moving the digits**

To multiply by 10 move the digits ONE place LEFT

e.g. 3.52 x 10

= 3 5 . 2

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

- **By moving the decimal point**

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

e.g. 13 X 10 = 130

3.4 x 10 = 34

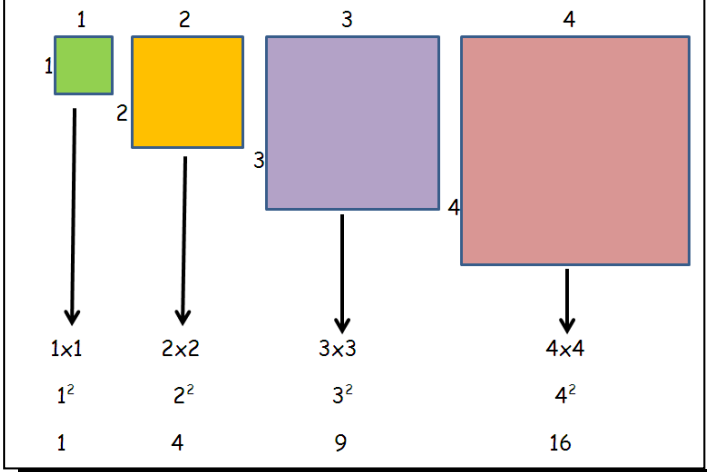
To **divide** by 10 move the dp ONE place LEFT

e.g. 13 ÷ 10 = 1.3

3.4 ÷ 10 = 0.34

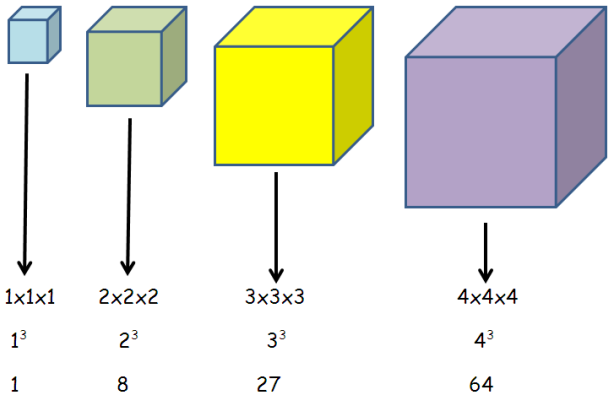
Square & Cube numbers

Square numbers



The first 12 square numbers are: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144

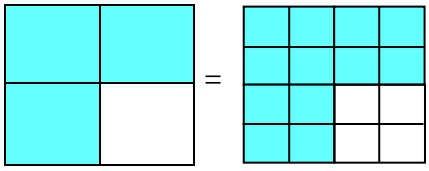
Cube numbers



The first 10 cube numbers are: 1, 6, 27, 64, 125, 216, 343, 512, 729, 1000

Equivalent fractions

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

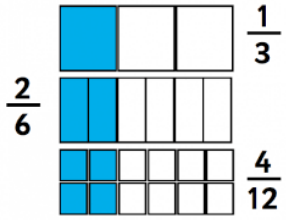


$$\frac{3}{4} = \frac{12}{16}$$

$$\frac{3}{4} \overset{(\times 4)}{\underset{(\times 4)}{}} = \frac{12}{16}$$

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

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



Fractions

- To compare fractions
  – the denominators must be the same

$\frac{2}{3}$ and $\frac{5}{6}$ →

$\frac{4}{6}$ and $\frac{5}{6}$ →

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

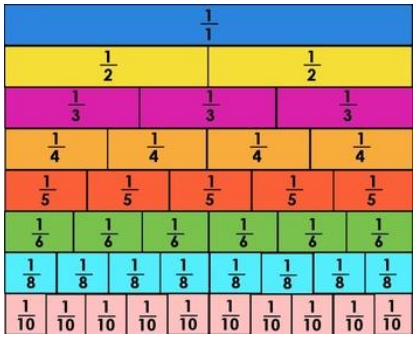
When the denominators are different

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

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

Multiply to make the denominators the same

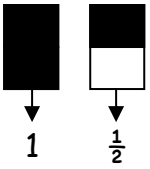
Fraction wall



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

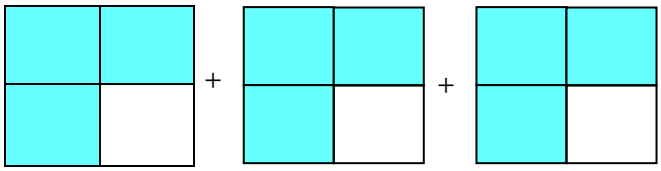
- **A mixed number can be changed back into an improper fraction**

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

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

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

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

Read & write decimals

The position of the digit gives it its value.

hundreds	tens	units	•	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				$\frac{617}{1000}$		

Order decimals

Example – To order 0.28, 0.3, 0.216

- Write them under each other
- **Fill gaps with zeros**
- Then order them

0.28 → 0.280
0.3 → 0.300
0.216 → 0.216

smallest largest
Order: 0.216 0.28 0.3

Round decimals

Rules for rounding

1. **Find the 'round off' digit**
2. **Move one digit to its right**
3. **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

- **To one decimal place**

e.g. 1 – To round 12.37 to 1 decimal place

'round off' digit — this digit is 5 or more

12.37 rounded to 1dp = 12.4

e.g. 2 – To round 12.32 to the nearest whole

'round off' digit — this digit is NOT 5or more

12.37 rounded to 1dp = 12.3

Decimal & Percentage equivalents

Learn

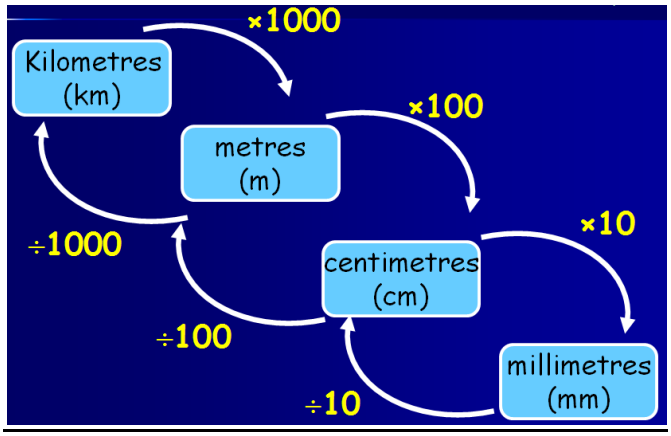
Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{1}{5}$	0.2	20%
$\frac{1}{10}$	0.1	10%
$\frac{1}{100}$	0.01	1%

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

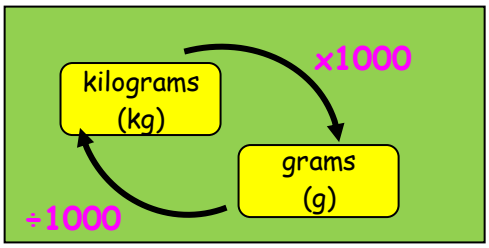
$\frac{11}{25}\ ^{(x4)} = \frac{44}{100} = 0.44 = 44\%$

Convert metric measure

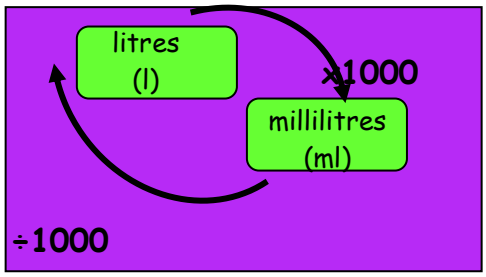
- **Length**



- **Mass or weight**

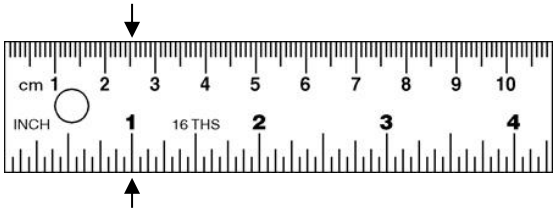


- **Capacity or volume**



Imperial measure

- 1 inch is about 2.5cm



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

- 1kg is about 2.2pounds

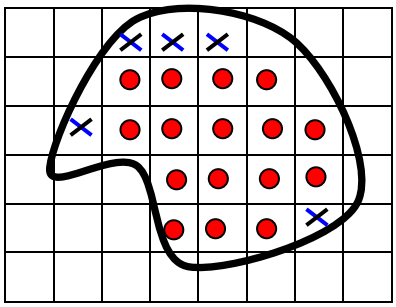
- A litre of water is a pint and three quarters

- A gallon is about 4.5 litres

Area & Perimeter

- **Estimate area**

The area is the space something takes up

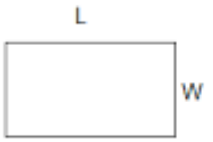


Number of whole squares(●) = 16

Number of ½ or more (×) = 5

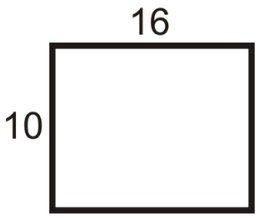
Estimated area = 21 squares

• Area and perimeter of rectangles



Perimeter = 2L + 2W
Same as: L + L + W +W

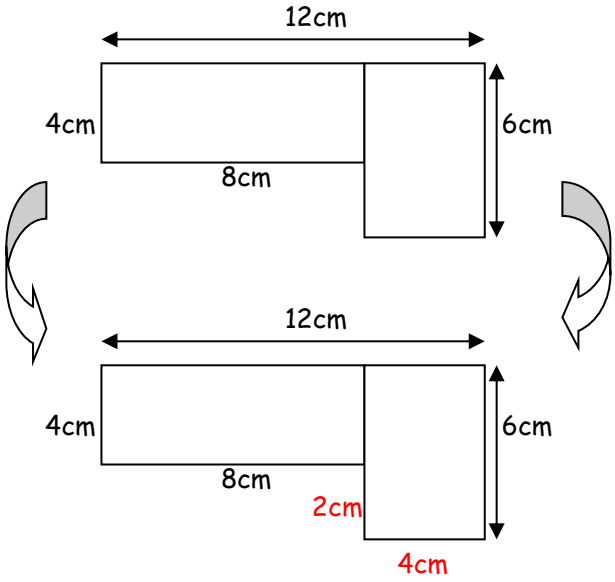
Area = L x W



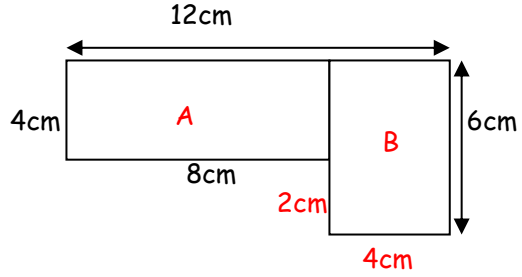
Area = 16 x 10 = 160 cm^2
Perimeter = (16 + 10) x 2
= 52cm

• Shapes composed of rectangles

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



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

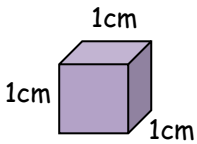


Area of shape = Area of A + B
= (8x4) + (6x4)
= 32 + 24
Area = 56cm^2

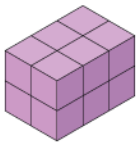
Volume

Volume is measured in cubes

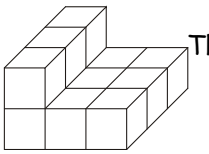
The 1 cm cube



The volume of this cube is 1 cm^3
(1 cubic centimetre)
It holds 1ml of water



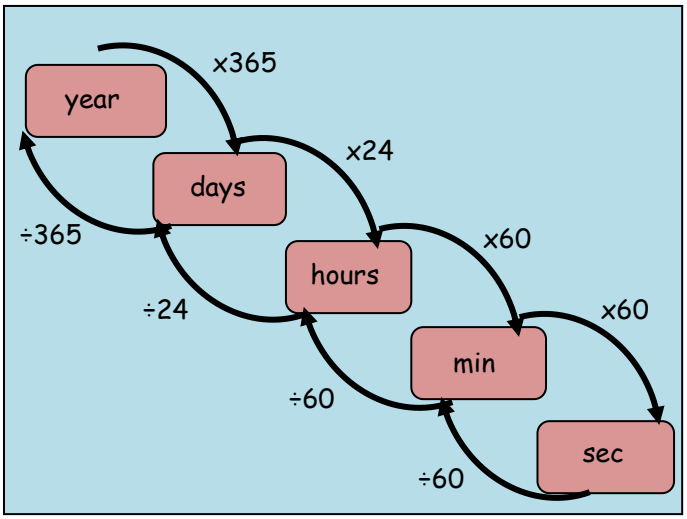
This cuboid contains 12 cubes
So the volume is 12 cm^3



This 3D shape contains 12 cubes
So the volume is 12 cm^3

Units of time

• Time conversion

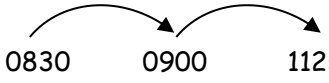


• Time intervals

Always go to the next whole hour first

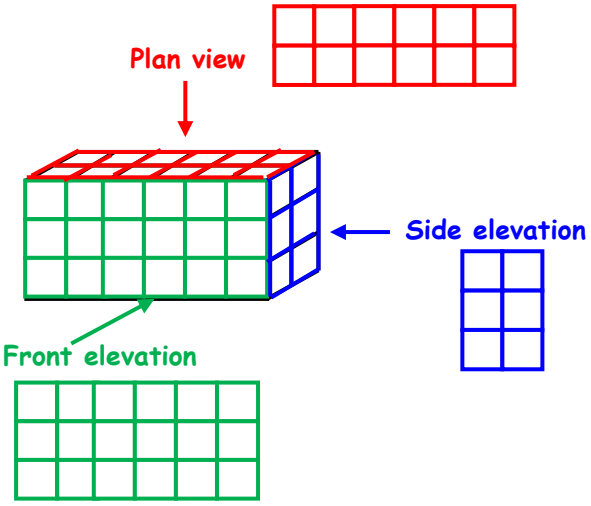
Example: 0830 to 1125

30min + 2h 25min = 2h 55min

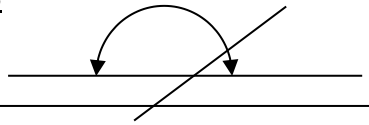


2D representations of 3D shapes

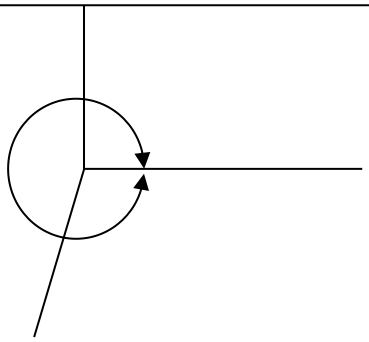
- There are 3 views:



Angles



Angles on a straight line add up to 180^0 or 2 right angles (2×90^0)

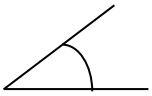


Angles about a point add up to 360^0 or 4 right angles (4×90^0)

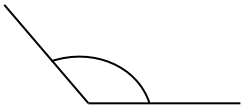
Angles

- **Types of angles**

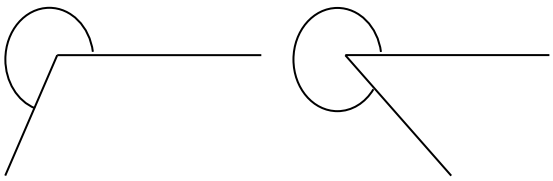
Acute
(less than 90^0)



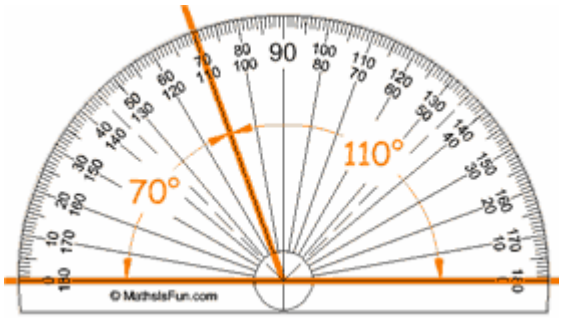
Obtuse
(Between 90^0 & 180^0)



Reflex
(Between 180^0 & 360^0)



- **Measure and draw angles**

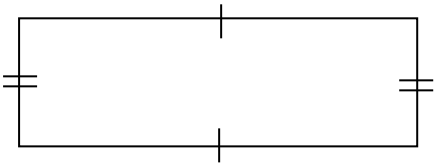


To be sure, count the number of degrees between the two arms of the angle

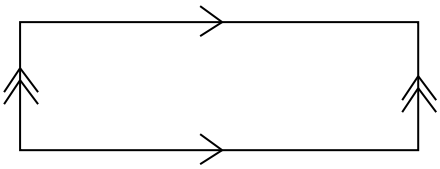
Properties of the rectangle

- A rectangle is a quadrilateral (4 sided shape)
- All angles are 90^0
- **Remember a square is a special rectangle**

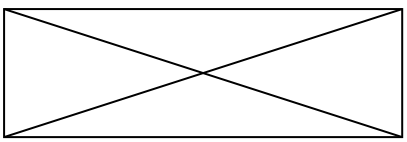
- Opposite sides are equal



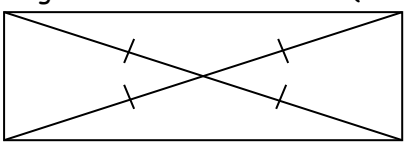
- Opposite sides are parallel



- Diagonals are equal

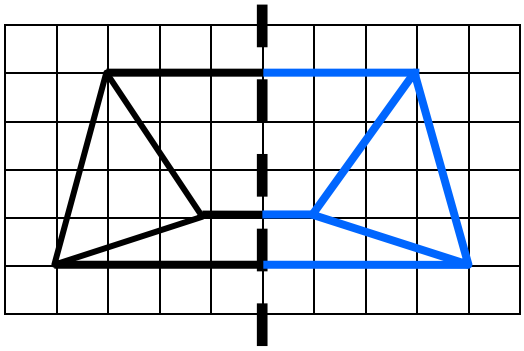


- Diagonals bisect each other (cut in half)

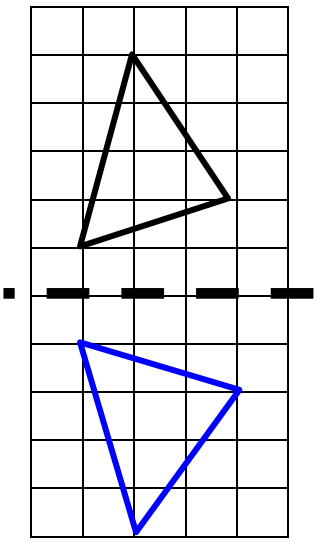


Reflection

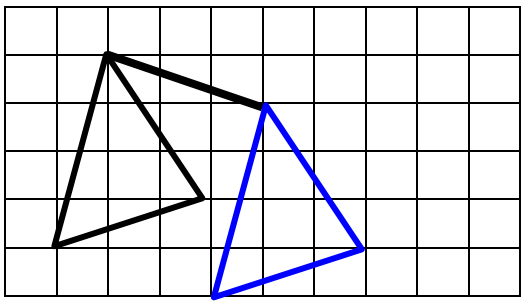
- **Reflection in a vertical line**



- **Reflection in a horizontal line**



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

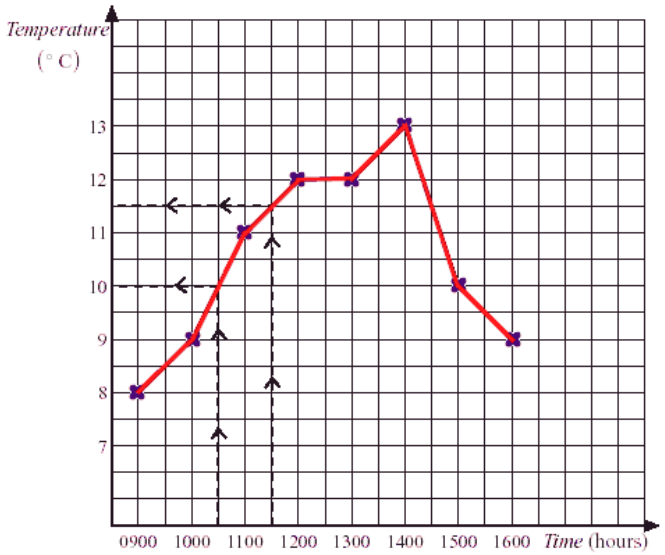
Data Handling and statistics

Line graphs

- **Find the difference**

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

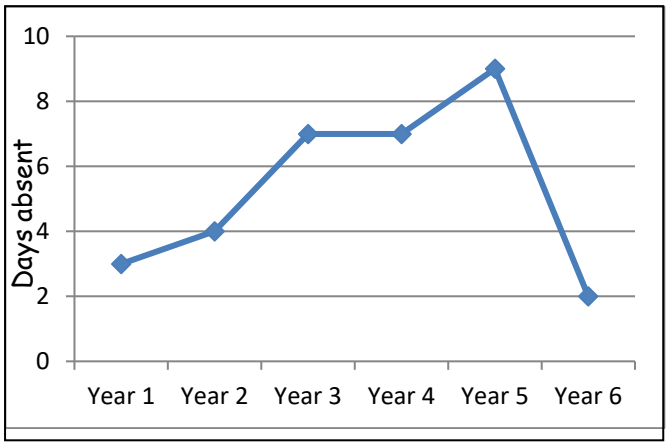
Answer: $11.5^0C - 10^0C = 1.5^0C$



- **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



Interpret information in tables

- **Distance table**

Example: Find the distance between **Leeds** and **York**
Answer: 40miles

Hull				
100	Leeds			
162	73	Manchester		
110	60	65	Sheffield	
63	40	118	95	York

- **Timetable**

Example: How long is the film?
Answer: 1.10 – 2.35 = 1h 25min = 85min

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

Times tables and associated facts

If we know **6 x 7 = 42** we also can know:

7 x 6 = 42

42 ÷ 6 = 7

42 ÷ 7 = 6

70 x 6 = 420

60 x 7 = 420

60 x 70 = 4200

70 x 60 = 4200

420 ÷ 6 = 70

420 ÷ 60 = 7

420 ÷ 7 = 60

420 ÷ 70 = 6

0.7 x 6 = 4.2

7 x 0.6 = 4.2

0.7 x 0.6 = 0.42 etc

Always try to spot patterns in maths… it makes things a lot easier.