

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

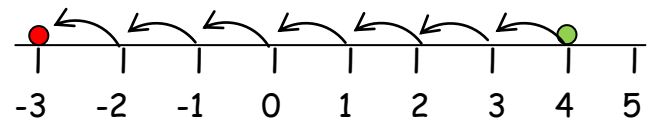
ANSWER - 500 000

5/3 Negative numbers

A number line is very useful for negative numbers.

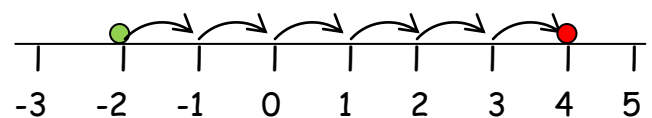
- The number line below shows:

$$4 - 7 = -3$$



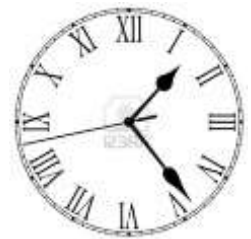
- The number line below shows:

$$-2 + 6 = 4$$



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 |
| | 2 | 8 |
| | 1 | 2 |
| | 3 | 4 |
| | 9 | 1 |
| | + | |
| | 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 |
| | 4 | 2 |
| | 7 | 5 |
| | - | |
| | 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

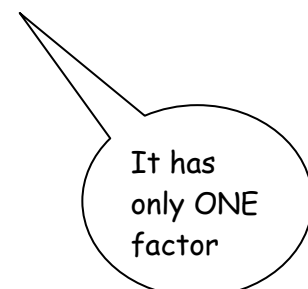


7 IS prime

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. 3561×7 COLUMN METHOD

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

e.g. 3561×7 GRID METHOD

| | | | | |
|---|-------|------|-----|----|
| | 3000 | 500 | 60 | 7 |
| 7 | 21000 | 3500 | 420 | 49 |

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

- By a **TWO-DIGIT** number

e.g. 152×34 COLUMN METHOD

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

e.g. 152×34 GRID METHOD

| | | | |
|----|-------------|-------------|-----------|
| | 100 | 50 | 2 |
| 30 | 3000 | 1500 | 60 |
| 4 | 400 | 200 | 8 |

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

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)

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

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

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

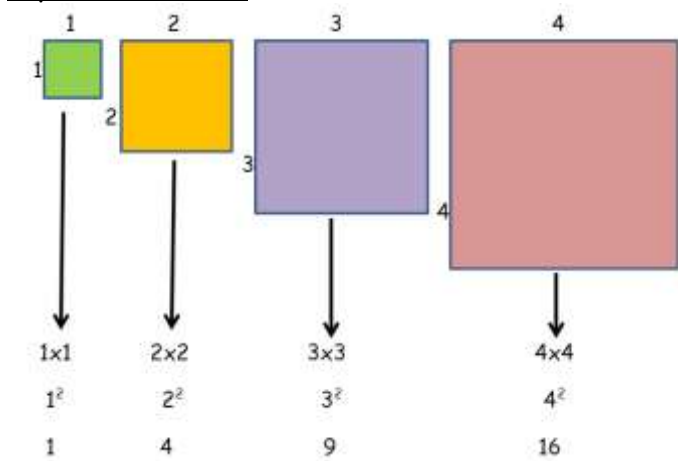
To multiply by 10 move the digits ONE place LEFT

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

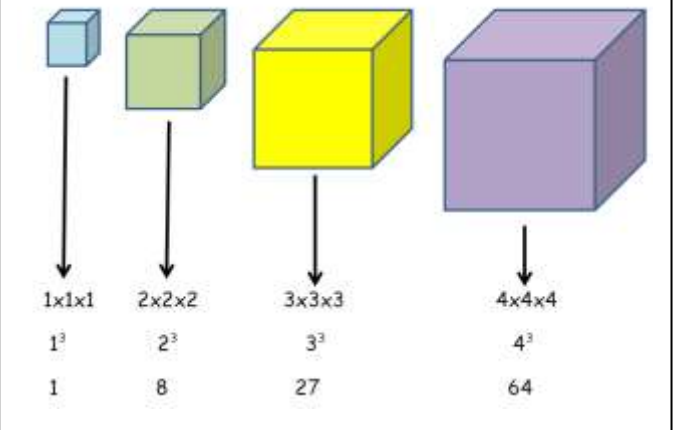
To multiply or divide by 100 move TWO places
To multiply or divide by 1000 move THREE places

5/12 Square & Cube numbers

Square numbers

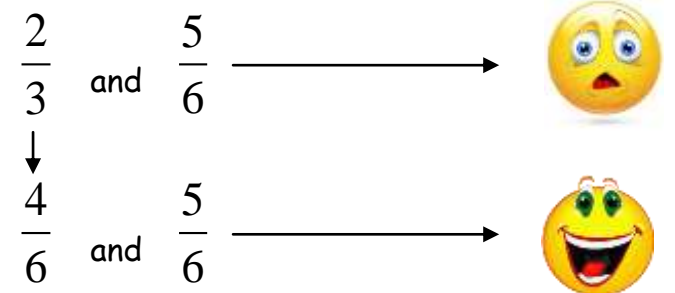


Cube numbers



5/13 Fractions

- To compare fractions
- the denominators must be the same



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

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

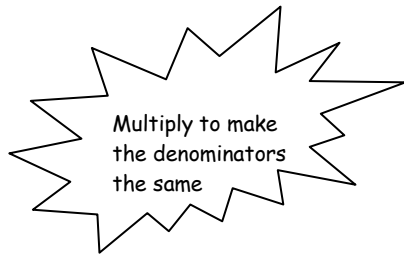
Do not subtract
the denominators

5/13 To add subtract fractions (cont)

When the denominators are different

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

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



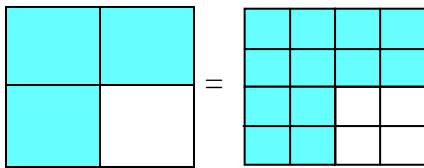
- A mixed number can be changed back into an improper fraction

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

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

5/14 Equivalent fractions

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



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

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

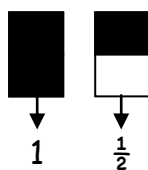
Fractions can also be divided to make the fraction look simpler - this is called **CANCELLING** or **LOWEST FORM**

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

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



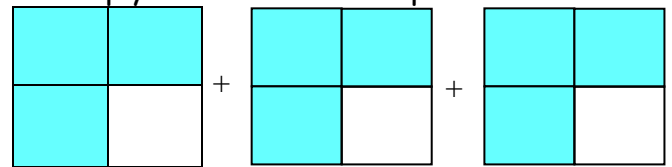
$$\frac{3}{2} = 1\frac{1}{2}$$

Improper fraction

Mixed number

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

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

5/17 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 5 or more

12.37 rounded to 1dp = 12.3

5/18 Read & write decimals

The value of each digit is shown in the table

| 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 | | | | | $\frac{617}{1000}$ | |

5/18 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

Order: smallest largest
 0.216 0.28 0.3

5/19 Decimal & Percentage equivalents

Learn

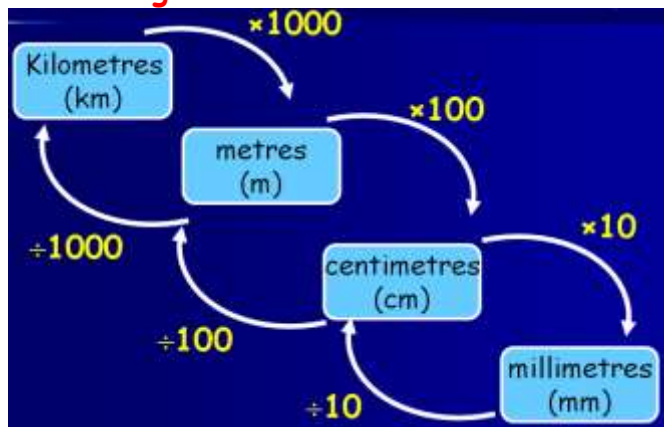
| Fraction | Decimal | Percentage |
|-----------------|---------|------------|
| $\frac{1}{2}$ | 0.5 | 50% |
| $\frac{1}{4}$ | 0.25 | 25% |
| $\frac{1}{5}$ | 0.2 | 20% |
| $\frac{1}{10}$ | 0.1 | 10% |
| $\frac{1}{100}$ | 0.01 | 1% |

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

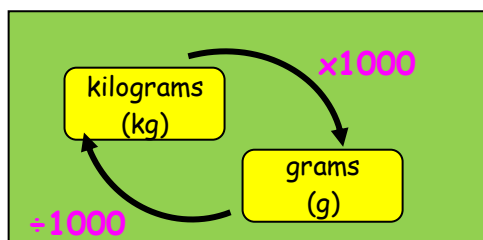
$$\frac{11}{25} \stackrel{(\times 4)}{=} \frac{44}{100} = 0.44 = 44\%$$

5/20 Convert metric measure

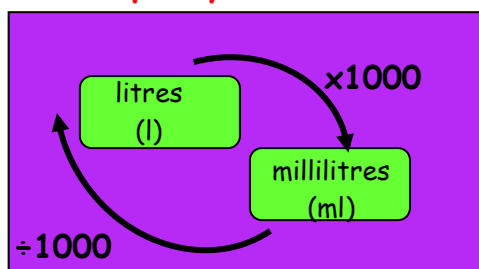
• Length



• Mass or weight

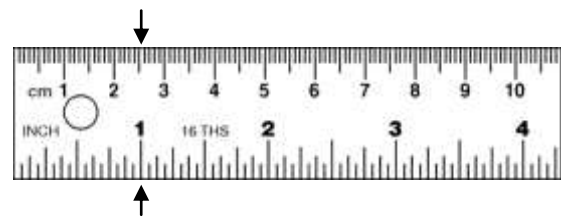


• Capacity or volume



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

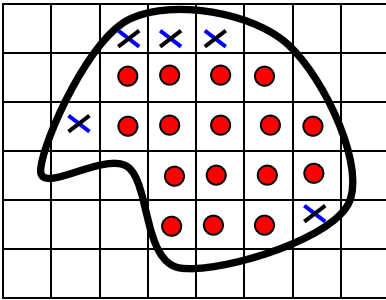


- A gallon is about 4.5 litres



5/21 Area & Perimeter

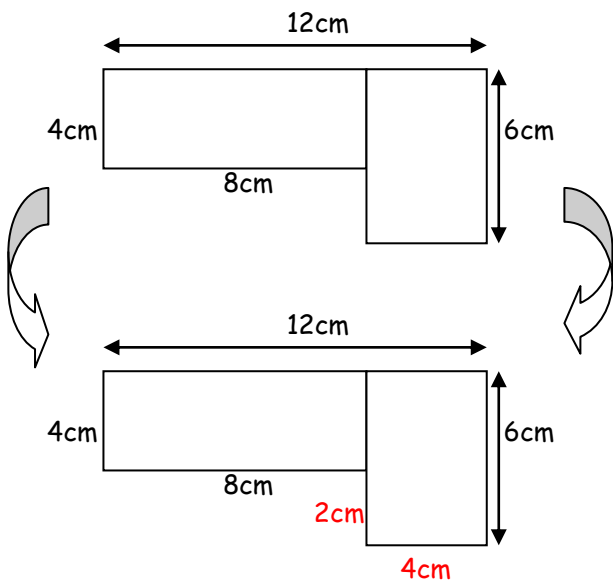
• Estimate area



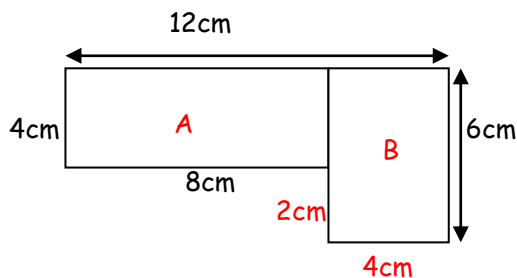
Number of whole squares (●) = 16
 Number of $\frac{1}{2}$ or more (X) = 5
Estimated area = 21 squares

• 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



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

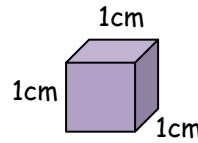


$$\begin{aligned} \text{Area of shape} &= \text{Area of A} + \text{B} \\ &= (8 \times 4) + (6 \times 4) \\ &= 32 + 24 \\ &= \underline{56\text{cm}^2} \end{aligned}$$

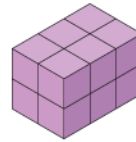
5/22 Volume

Volume is measured in cubes

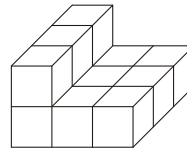
The 1 cm cube



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



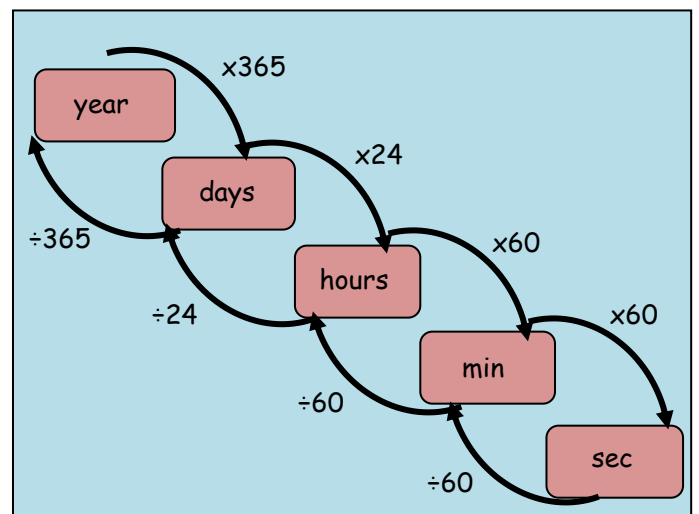
This cuboid contains 12 cubes
 So the volume is 12 cm^3



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

5/23 Units of time

• Time conversion



• Time intervals

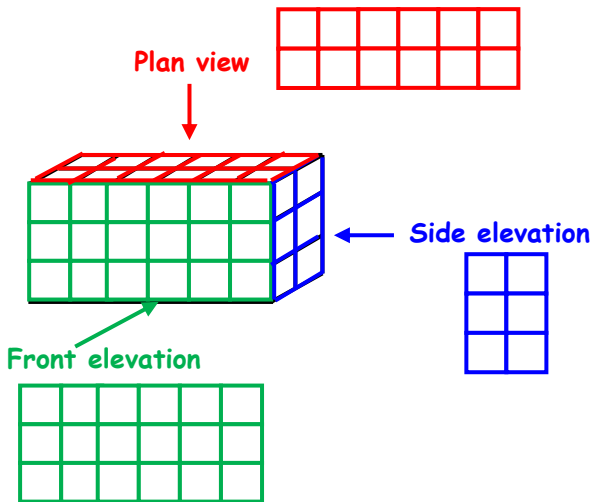
Always go to the next whole hour first

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

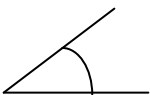
- There are 3 views:



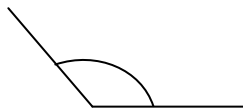
5/25 Angles

- Types of angles

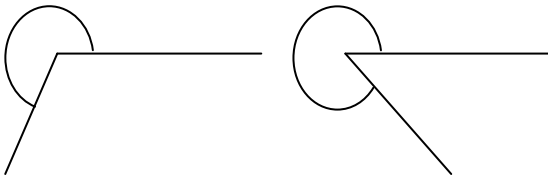
Acute
(less than 90°)



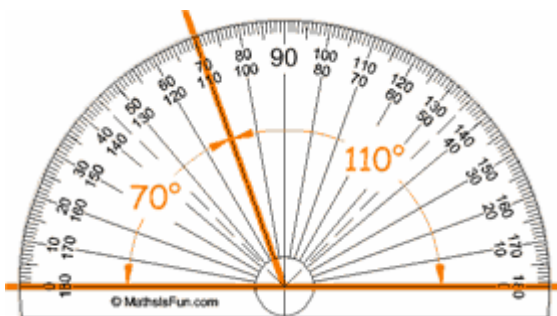
Obtuse
(Between 90° & 180°)



Reflex
(Between 180° & 360°)

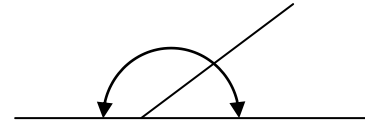


- Measure and draw angles

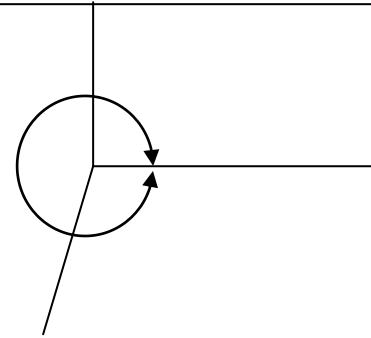


To be sure, count the number of degrees between the two arms of the angle

5/26 Angles



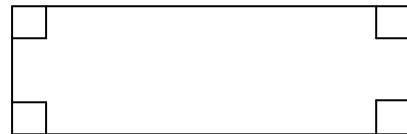
Angles on a straight line add up to 180°
or 2 right angles ($2 \times 90^\circ$)



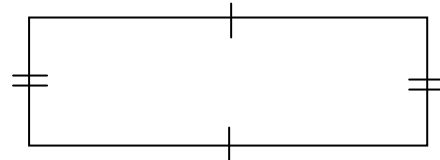
Angles about a point add up to 360°
or 4 right angles ($4 \times 90^\circ$)

5/27 Properties of the rectangle

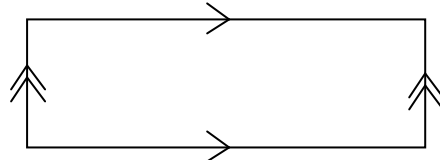
- A rectangle is a quadrilateral (4 sided shape)
- All angles are 90°



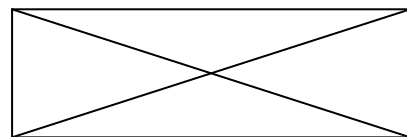
- Opposite sides are equal



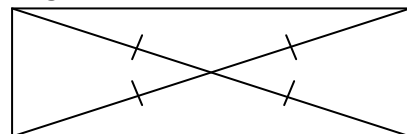
- Opposite sides are parallel



- Diagonals are equal



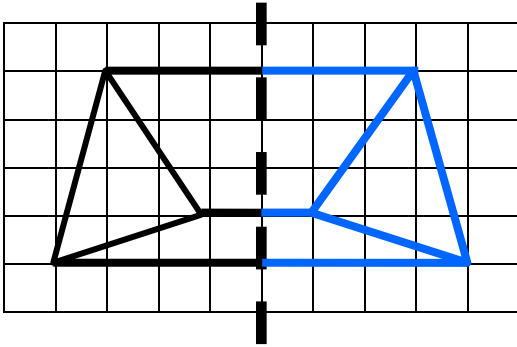
- Diagonals bisect each other (cut in half)



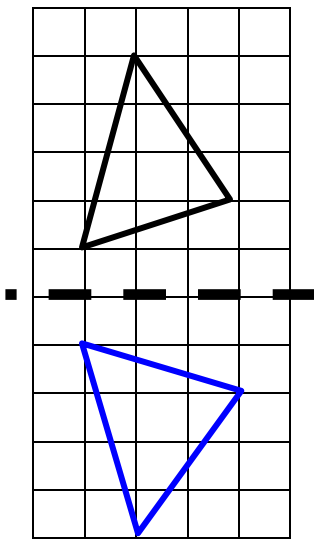
- A square is a special rectangle

5/28 Reflection

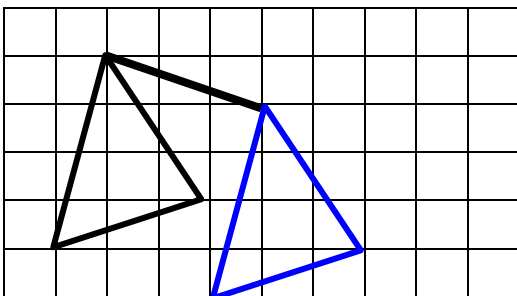
- Reflection in a vertical line



- Reflection in a horizontal line



5/28 Translation - 4 right & 1 down



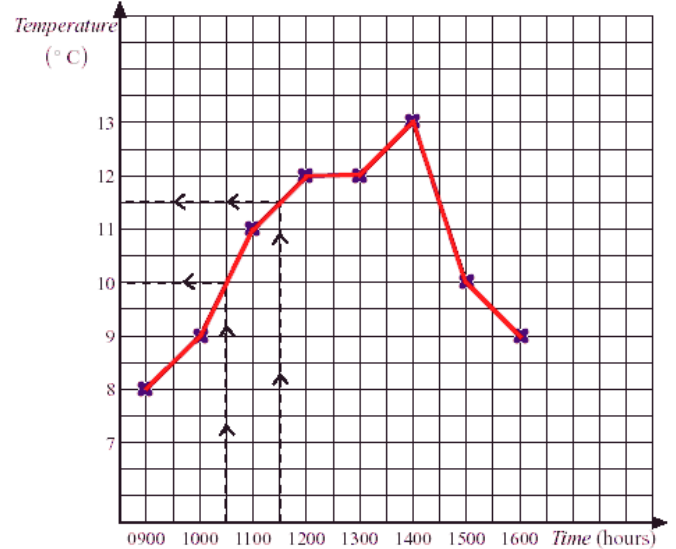
- In reflection and translation the shapes remain the same size and shape - CONGRUENT
- In reflection the shape is flipped over
- In translation the shape stays the same way up

5/29 Line graphs

- Find the difference

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

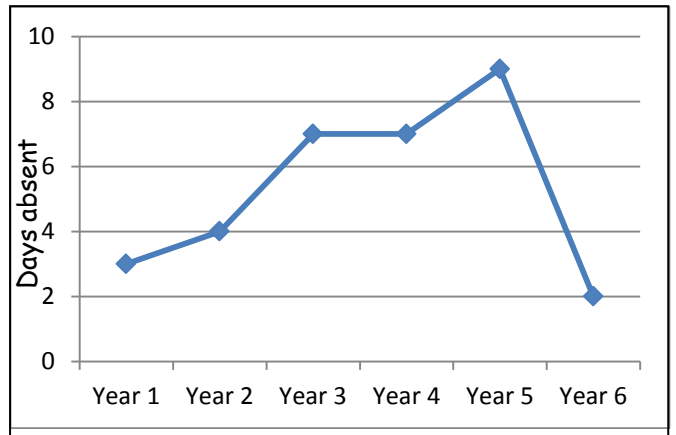
Answer: $11.5^{\circ}\text{C} - 10^{\circ}\text{C} = 1.5^{\circ}\text{C}$



- 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 | Leeds | | | |
| 162 | 73 | Manchester | | |
| 110 | 60 | 65 | Sheffield | |
| 63 | 40 | 118 | 95 | York |

- **Timetable**

Example: How long is the film?

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

| | |
|---------------|-----------------------|
| 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 |