

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

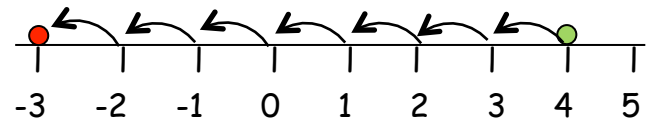
ANSWER - 500 000

Negative numbers

A number line is very useful for negative numbers.

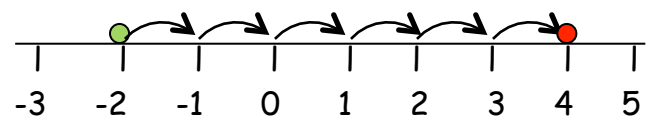
- The number line below shows:

$$4 - 7 = -3$$



- 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 | 4 | 5 |
| 4 | 2 | 7 |
| 2 | 1 | 8 |

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:

$$45 \quad 75 \quad 77$$

Example 2 - think of:

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

- But in your head say:

$$1236 \quad 1636 \quad 1646 \quad 1651$$

Mental methods for subtraction

Example 1 - think of:

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

- But in your head say:

$$56 \quad 26 \quad 24$$

Example 2 - think of:

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

- But in your head say:

$$1236 \quad 836 \quad 826 \quad 821$$

Multi-step problems

Based upon 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 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

It has only ONE

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 |

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

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)

32
64
96
128
160

$$\begin{array}{r} 0154 \\ 32 \overline{)4928} \end{array}$$

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

e.g. $4928 \div 32$

ALTERNATE METHOD

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

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

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

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

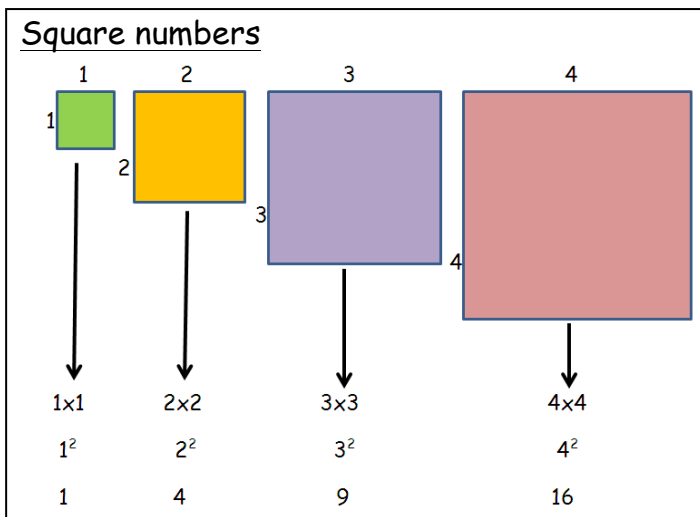
e.g. $3.52 \times 10 = 35.2$

To multiply or divide by 100 move TWO places

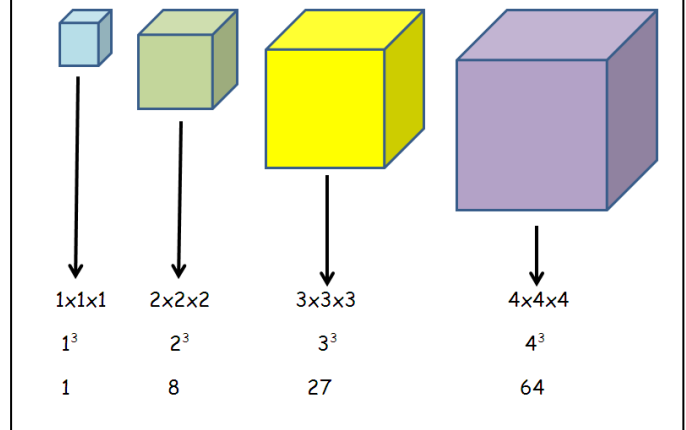
To multiply or divide by 1000 move THREE places

Square & Cube numbers

Square numbers





Cube numbers



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

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

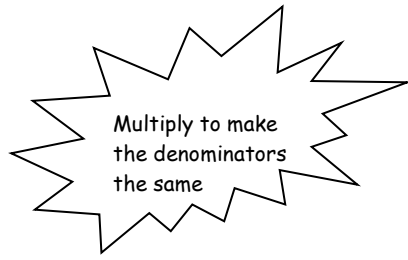
Do not subtract
the denominators

To add subtract fractions (cont)

When the denominators are different

$$\frac{3}{8} + \frac{1 \times 2}{4 \times 2}$$

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



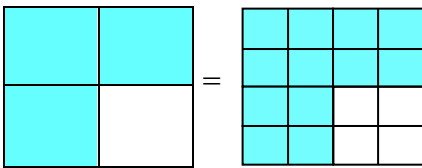
- A mixed number can be changed back into an improper fraction

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

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

Equivalent fractions

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



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

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

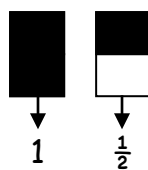
Fractions can also be divided to make the fraction look simpler - this is called **CANCELLING** or **LOWEST FORM**

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

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



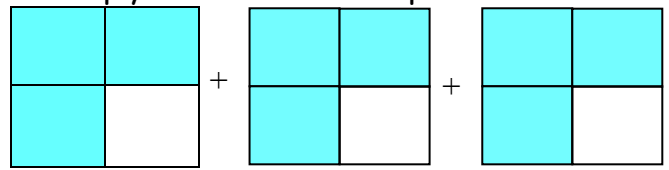
$$\frac{3}{2} = 1\frac{1}{2}$$

Improper fraction

Mixed number

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

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

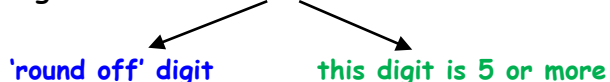
Round decimals

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



5.62 rounded to nearest whole = 6

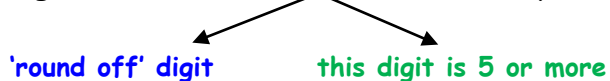
e.g. 2 - To round 5.32 to the nearest whole



5.32 rounded to nearest whole = 5

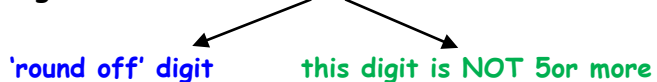
To one decimal place

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

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

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

Decimal & Percentage equivalents

Learn

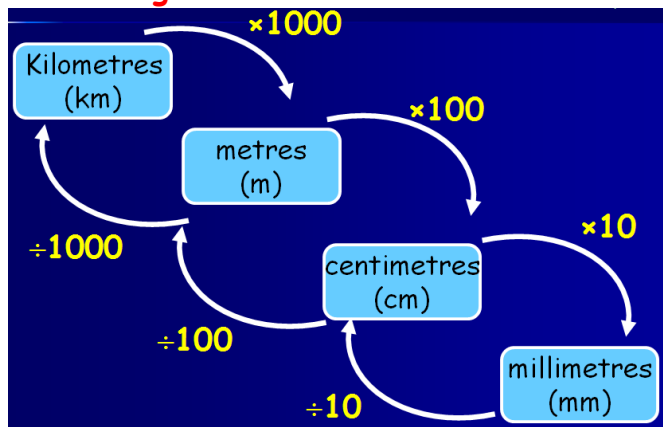
| Fraction | Decimal | Percentage |
|-----------------|---------|------------|
| $\frac{1}{2}$ | 0.5 | 50% |
| $\frac{1}{4}$ | 0.25 | 25% |
| $\frac{1}{5}$ | 0.2 | 20% |
| $\frac{1}{10}$ | 0.1 | 10% |
| $\frac{1}{100}$ | 0.01 | 1% |

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

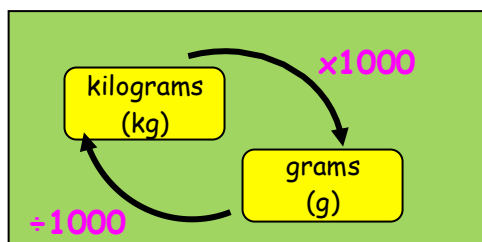
$$\frac{11(\times 4)}{25(\times 4)} = \frac{44}{100} = 0.44 = 44\%$$

Convert metric measure

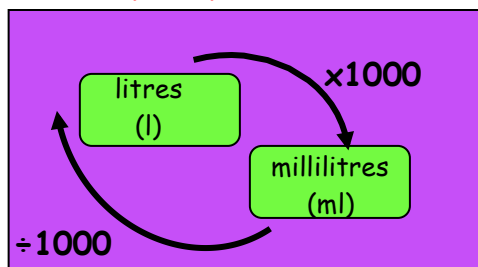
• Length



• Mass or weight

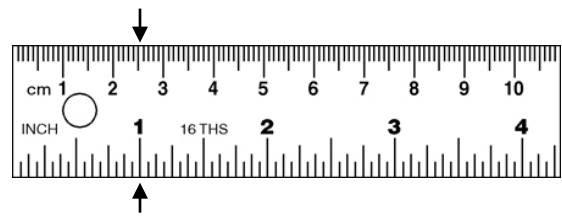


• Capacity or volume



Imperial measure

- 1 inch is about 2.5cm



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

- 1kg is about 2.2pounds



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

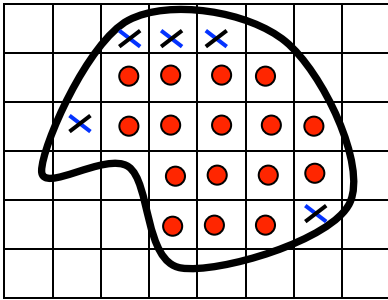


- A gallon is about 4.5 litres



Area & Perimeter

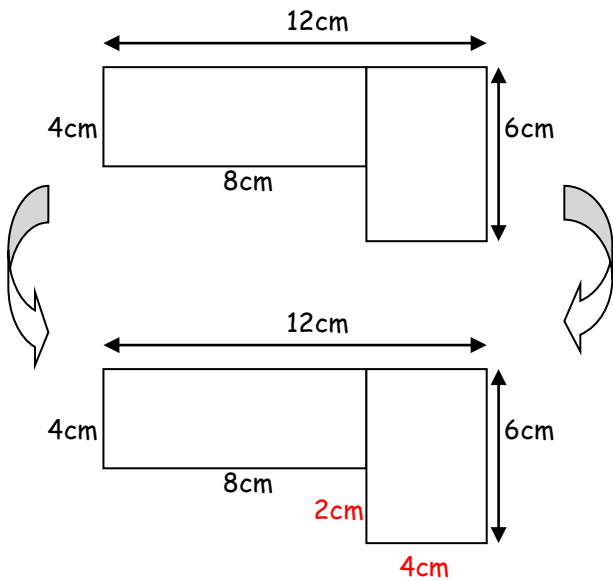
Estimate area



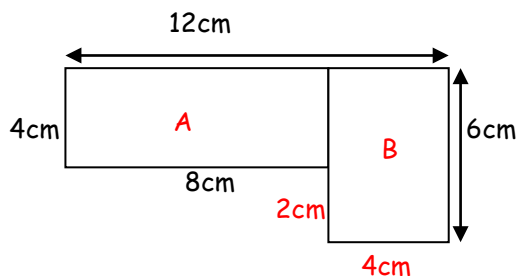
Number of whole squares (●) = 16
 Number of $\frac{1}{2}$ or more (×) = 5
 Estimated area = 21 squares

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



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

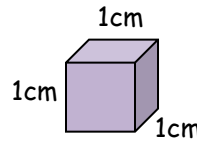


$$\begin{aligned} \text{Area of shape} &= \text{Area of A} + \text{Area of B} \\ &= (8 \times 4) + (6 \times 4) \\ &= 32 + 24 \\ &= 56\text{cm}^2 \end{aligned}$$

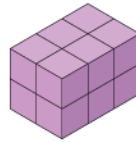
Volume

Volume is measured in cubes

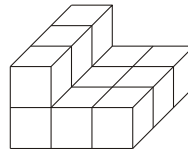
The 1 cm cube



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



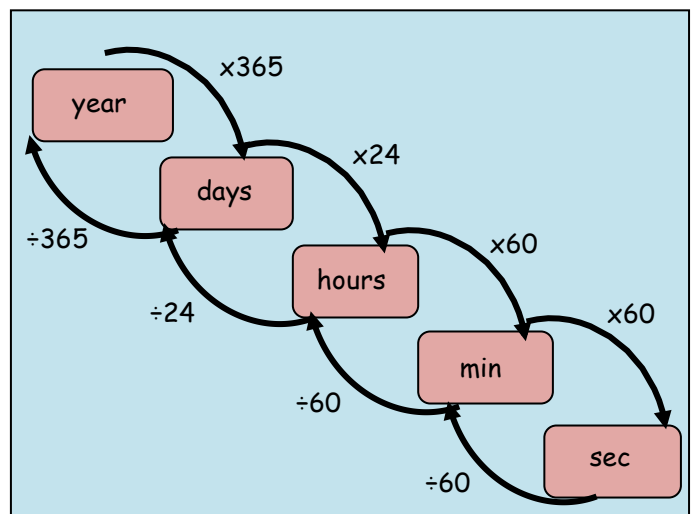
This cuboid contains 12 cubes
 So the volume is 12 cm^3



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

Units of time

Time conversion



Time intervals

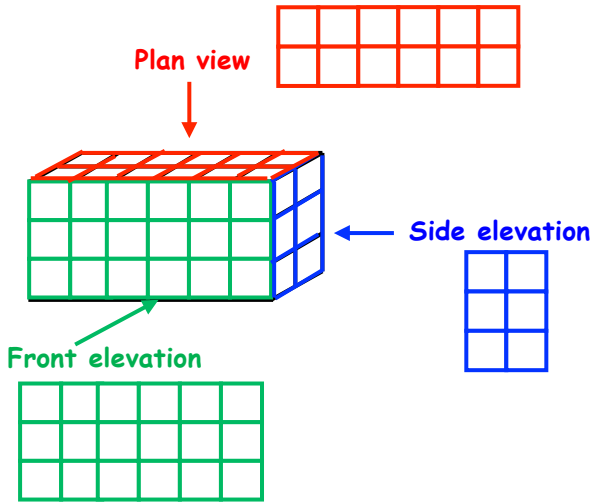
Always go to the next whole hour first

Example: 0830 to 1125

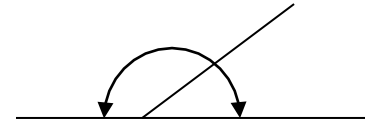
$$30\text{min} + 2\text{h } 25\text{min} = 2\text{h } 55\text{min}$$

2D representations of 3D shapes

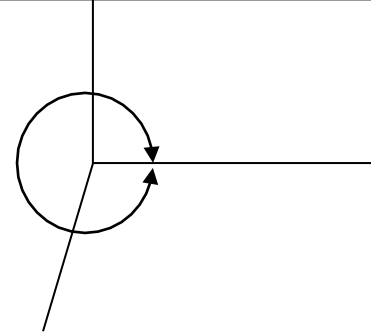
- There are 3 views:



Angles



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

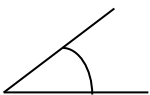


Angles about a point add up to 360°
or 4 right angles ($4 \times 90^\circ$)

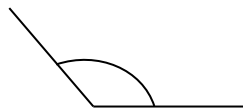
Angles

- Types of angles

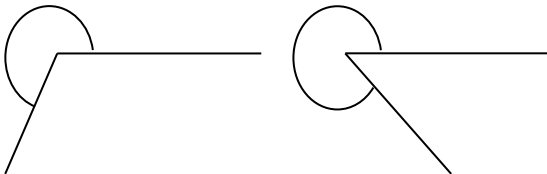
Acute
(less than 90°)



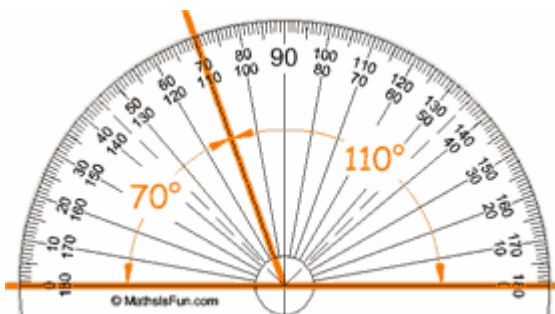
Obtuse
(Between 90° & 180°)



Reflex
(Between 180° & 360°)



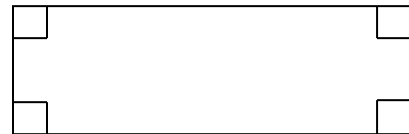
- Measure and draw angles



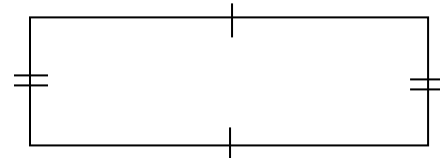
To be sure, count the number of degrees between the two arms of the angle

Properties of the rectangle

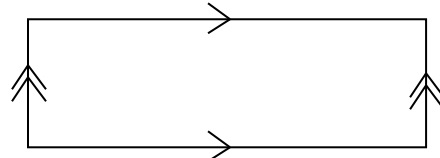
- A rectangle is a quadrilateral (4 sided shape)
- All angles are 90°



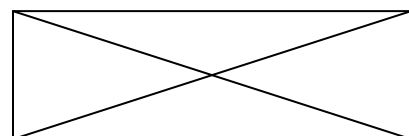
- Opposite sides are equal



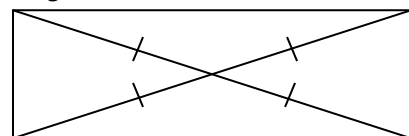
- Opposite sides are parallel



- Diagonals are equal



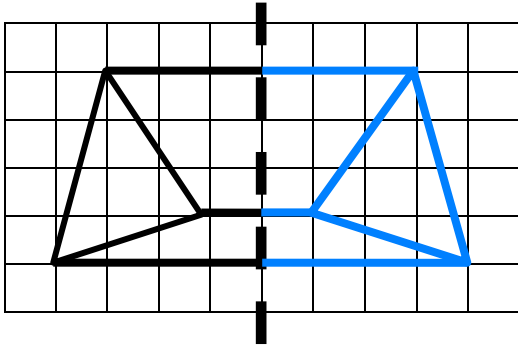
- Diagonals bisect each other (cut in half)



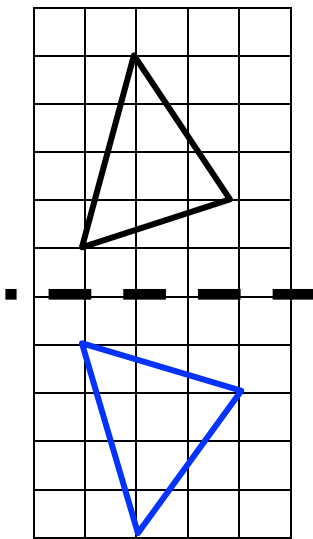
- A square is a special rectangle

Reflection

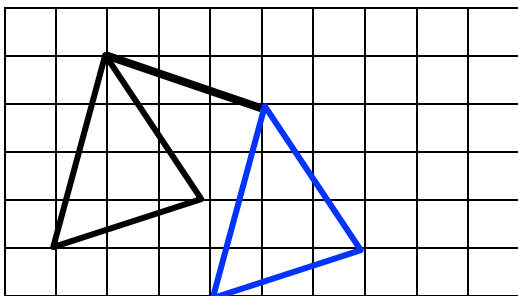
- Reflection in a vertical line



- Reflection in a horizontal line



Translation - 4 right & 1 down



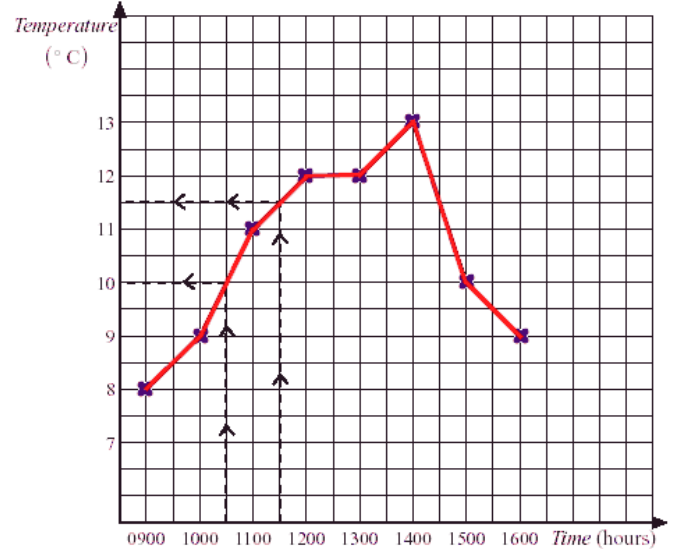
- In reflection and translation the shapes remain the same size and shape - CONGRUENT
- In reflection the shape is flipped over
- In translation the shape stays the same way up

Line graphs

- Find the difference

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

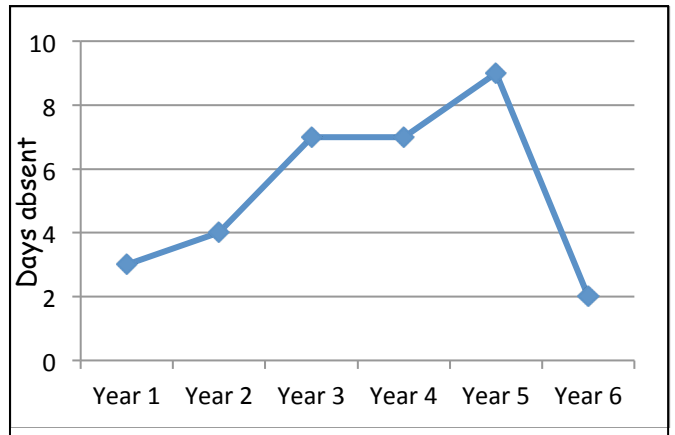
Answer: $11.5^{\circ}\text{C} - 10^{\circ}\text{C} = 1.5^{\circ}\text{C}$



- 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



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 |