5/1 Multiply & divide by 10, 100, 1000

- **By moving the decimal point**

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

e.g. 3.4 x 10 = 34

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

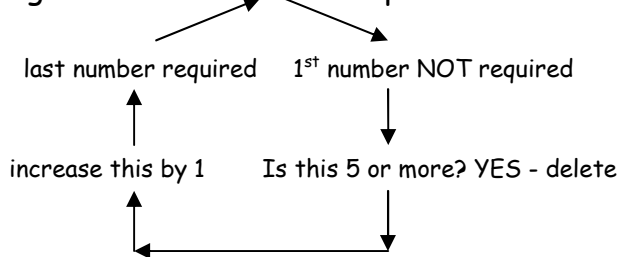e.g. 3.4 x 10 = 0.34

- **By moving the digits**

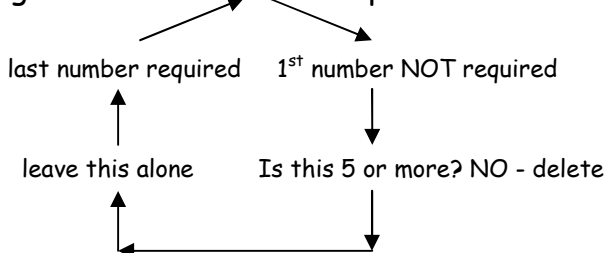To multiply by 10 move the dp ONE place RIGHT

e.g.   3.52 x 10

= 3 5 . 2

5/2 Rounding decimals

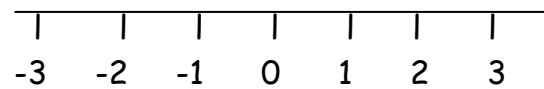- Look at the last number required
- Look at the first number NOT required

e.g. To round 5.47 to 1dp

last number required   1ˢᵗ number NOT required

increase this by 1   Is this 5 or more? YES - delete

e.g. To round 5.43 to 1dp

last number required   1ˢᵗ number NOT required

leave this alone   Is this 5 or more? NO - delete

5/2 Order negative numbers

-3   -2   -1   0   1   2   3

2 > -2 ⟶ We say 2 is bigger than -2

-1 < 3 ⟶ We say -1 is less than 3

5/3 Number patterns

Look to see how numbers are connected
- **Multiples**

Multiples of 6 are: 6, 12, 18, 24, 30...
- **Factors**

Factors of 6 are: 1, 6, 3, 2
- **Prime numbers**

Prime numbers have only TWO factors

2, 3, 5, 7, 11, 13, 17, 29, 31, 37 ......
- **Sequences**

1, 4, 9, 16, 25, 36 ... are all square numbers

1, 8, 27, 64, 125 ... are all cube numbers

1, 4, 7, 10, 13, 16 ... increase b 3 each time

5/4 Order fractions and decimals

- **Fractions**

They must have the same denominator

e.g. $\dfrac{5}{6}$ $\dfrac{7}{12}$ $\dfrac{2}{3}$ $\dfrac{3}{4}$

$\dfrac{10}{12}$ $\dfrac{7}{12}$ $\dfrac{9}{12}$ $\dfrac{8}{12}$

Now the fractions can be ordered

- **Decimals**

Give them all the same number of digits

e.g. 0.3,   0.304,   0.32,   0.33

0.300   0.304   0.320   0.330

Now the decimals can be ordered

5/5 Cancel a fraction to its lowest terms

See what number divides exactly into both the numerator and denominator

e.g. $\dfrac{8}{12} \xrightarrow{\div 4} \dfrac{2}{3}$

e.g. $\dfrac{15}{40} \xrightarrow{\div 5} \dfrac{3}{8}$

5/6 Order of operations

Bracket
Indices
Divide
Multiply } Do these in the order they appear

Add
Subtract } Do these in the order they appear

e.g. 3 + 4 x 6 – 5 = 22

first

5/7 Fraction of quantity with calculator

- $\dfrac{4}{5}$ means ÷ 5 x 4

e.g. To find $\dfrac{4}{5}$ of £40

£40 ÷ 5 x 4 = £40

5/7 Percentage of quantity with calculator

- **Change the percentage to a decimal**

e.g. 8% of £240   12 ½ % of 80kg
  = 0.08 x 240   = 0.125 x 80
  = £19.20   = 10kg

          80% of 52 litres
          = 0.8 x 52
          = 41.6 litres

5/8 Multiply by a two digit number

Try different methods to find which suits you

e.g. 152 x 34   **COLUMN METHOD**
          152
           34x
          608   (x4)
         4560   (x30)
         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**

e.g. 152 x 34   **CHINESE METHOD**
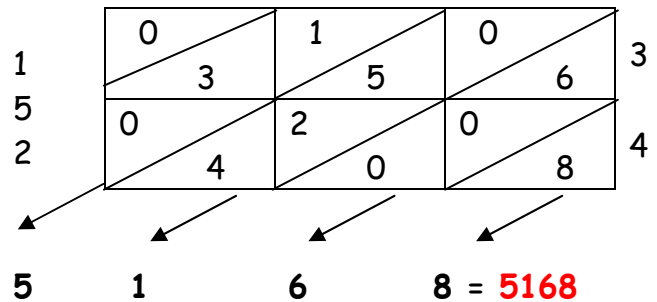
5   1   6   8 = **5168**

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

Half   Double

152 x 34
76   68
38   136
19   272
9   544
4   1088
2   2176
1   4352

Cross out left hand side even numbers

Add what is left
272 + 544 + 4352 = 5168

5/8 Divide by a two digit number

Try different methods to find which suits you

e.g. 4928 ÷ 32   **BUS SHELTER 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**

---

e.g. 4928 ÷ 32   **CHUNKING METHOD**

```
      4 9 2 8
      3 2 0 0        100 X 32
      1 7 2 8
      1 6 0 0         50 X 32
        1 2 8
        1 2 8          4 X 32
```

4928 ÷ 32 = **154**

---

e.g. 4928 ÷ 32   **SHORT DIVISION METHOD**

(Except write down some of your tables down first)

```
32
64              0 1 5 4
96         32) 4⁴9¹⁷2 ¹²8
128
160
```

4928 ÷ 32 = **154**

5/9 Negative numbers

Remember the rules:
- When subtracting go down the number line
- When adding go up the number line

- 8 + - 2 is the same as 8 – 2 = 6
- 8 - + 2 is the same as 8 – 2 = 6
- 8 - - 2 is the same as 8 + 2 = 10

5/10 Ratio
- How it is written

△ △ ★ ★ ★ ★ ★ ★

Yellow : Red
=   2 : 6

- How it can be simplified

△ ★ ★ ★ △ ★ ★ ★

Yellow : Red
=   1 : 3

- Simplify by cancelling

Examples

$2^{÷2}: 6^{÷2} = 1 : 3$
$10^{÷5} : 15^{÷5} = 2 : 3$

5/10 Direct proportion

e.g.1
5 miles is approximately 8km.
How many miles are equal to 24km?
24km ÷ 8km = 3
5 miles x 3 = 15 miles
e.g.2
It takes 90 Lego bricks to
build 3 planes
How many bricks would be needed for 11?

1 plane uses 90 ÷ 3 = 30 bricks
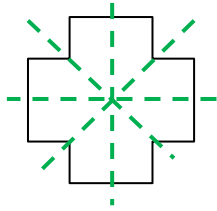**11 planes will use 11 x 30 = 330 bricks**

5/12&13 Properties of 2D & 3D shapes

Symmetries

- **Order of Line Symmetry**

this is the number of times a shape can be folded so that one side falls exactly onto the other side

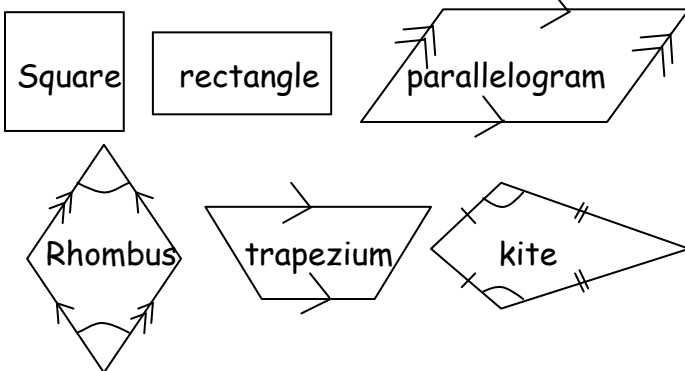**This shape has line symmetry ORDER 4**

- **Order of Rotational Symmetry**

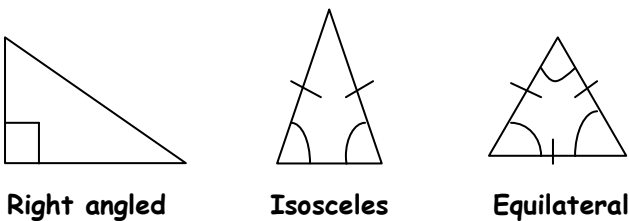this is the number of times a shape falls into its outline in one complete turn
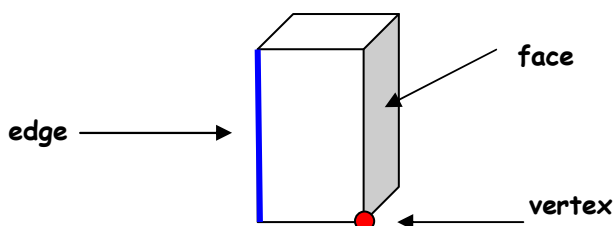
A parallelogram has rotational symmetry order 2
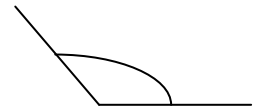
Names of shapes – Quadrilaterals

Square   rectangle   parallelogram

Rhombus   trapezium   kite

Names of shapes - Triangles

Right angled   Isosceles   Equilateral

3D shape

face

edge

vertex

5/14 Angles

- **Types of angles**

Acute   Right   Obtuse
(less than 90^0)   (Exactly 90^0)   (Between 90^0 & 180^0)
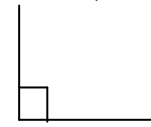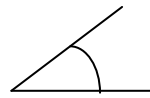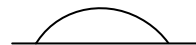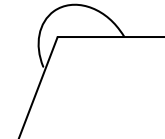
Straight   Reflex   Complete
line   turn
(180^0)   (Between 180^0 & 360^0)   (360^0)
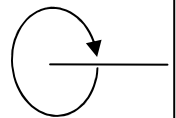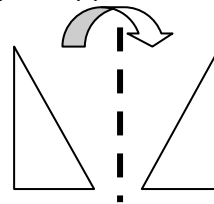
- **Angles of a triangle**
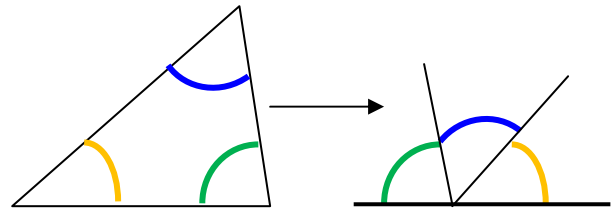
Angles of a triangle add up to 180^0
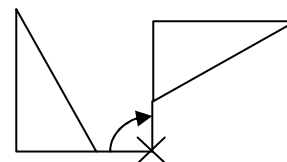
5/15 Transform Shapes

- **Reflection**
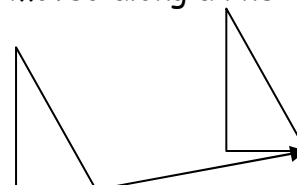
A shape flipped over a line
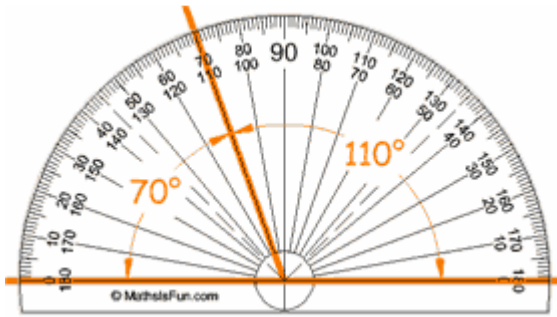
- **Rotation**

A shape turned round a point

- **Translation**

A shape moved along a line

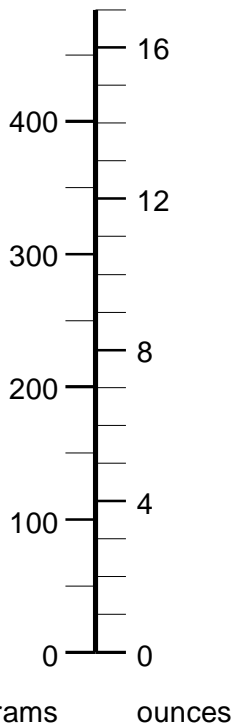## 5/16 Measure and draw angles

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

5/17 Scales

grams   ounces

Work out the value of each small division before taking any readings

5/18 Units of measure

- **Metric units**

Length	Weight	Capacity
10mm =1cm	1000g=1kg	1000ml=1 litre
100cm =1m		10ml=1centilitre
1000m=1km		

- **Imperial units**

Length	Weight	Capacity
1 inch=2.5cm	2.2 pounds≈1kg	1gallon≈4.5litres
1 foot=30cm		
1 mile≈1.6km		

5/19 Area and perimeter of rectangle

Area is the amount of space inside the outline of a shape
Perimeter is the length of the outline of a shape
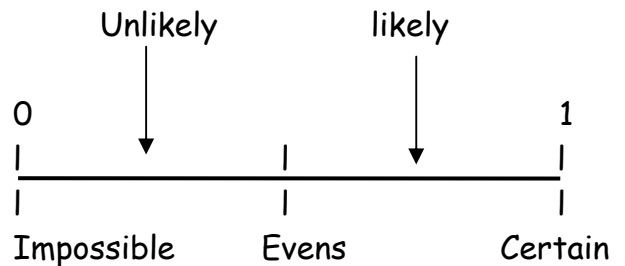
- **Area of rectangle = length × width**

3cm

8cm
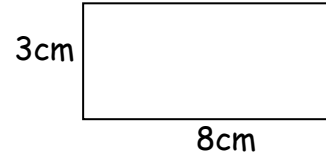
Area of rectangle = l × w
$\qquad$ = 8 × 3
$\qquad$ = **24cm^2**

- **Perimeter of the rectangle**

Perimeter = 3 + 8 + 3 + 8 OR 2x3 + 2x8
$\qquad$ **22cm**

5/20 Probability

- **Probability scale**

Unlikely   likely

0 $\qquad\qquad\qquad\qquad\qquad$ 1

Impossible   Evens   Certain

- **Calculate probability**

P(event) = No. of outcomes which give the event
$\qquad\qquad\qquad$ Total number of outcomes

- **Probability of an event NOT happening**

If p(event) = p
$\quad$ P(event NOT happening) = 1 - p

e.g. If p(rain) = 0.3
$\qquad$ p(NOT rain) = 1 – 0.3= 0.7

5/21 Averages and Range

Mode – most frequent measure
Median – middle measure (put them in order)
Mean – total of measures ÷ no. of measures
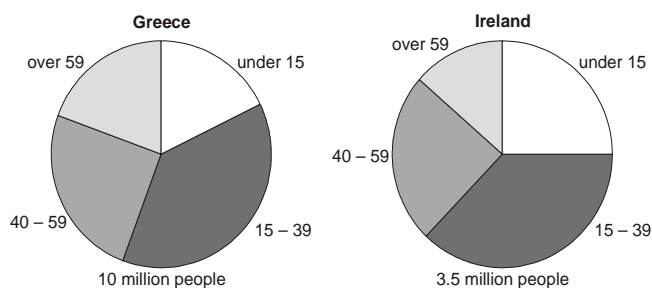Range – Highest minus lowest measure

- **Range** measures how spread out the measures are
- **Mode, median & mean** gives an average
- The range and one of the averages is used to compare distributions

---

5/22 Probability – repeating an experiment

LEARN
- Different outcomes are possible from repeating an experiment

- The larger the number of trials, the more valid the result

5/23 Interpret graphs & diagrams

Greece
over 59   under 15
40 – 59   15 – 39
10 million people

Ireland
over 59   under 15
40 – 59   15 – 39
3.5 million people

Here we are not told how many people in any of the sectors
We can therefore only comment on proportion by comparing the sizes of sectors in each pie chart
e.g. there is a larger proportion of the population under 15 in Ireland than Greece

It does not mean there are more people