

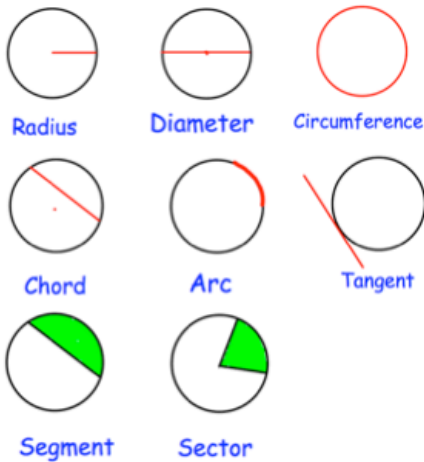
Week 1 Study Sheet

Area of a Circle

$$\text{Area} = \pi r^2$$

$$\begin{aligned} \text{Area} &= \pi r^2 \\ &= \pi \times 5^2 && \text{Always square the radius before multiplying by } \pi \\ &= \pi \times 25 \\ &= 78.54\text{cm}^2 && \text{Always include the correct units e.g. cm}^2, \text{m}^2, \text{mm}^2 \text{ etc} \end{aligned}$$

Parts of a Circle



$$\text{Circumference} = \pi \times \text{diameter}$$

Polygon	Sum of angles	Size of each interior (regular)
triangle	180°	60°
quadrilateral	360°	90°
pentagon	540°	108°
hexagon	720°	120°
heptagon	900°	128.57°
octagon	1080°	135°

Translation vectors

$$\begin{pmatrix} 5 \\ -1 \end{pmatrix} \leftarrow \begin{array}{l} \text{5 squares right} \\ \text{1 square down} \end{array}$$

Enlargements

Scale factor for sides **2**
 Area will be **4** times larger
 Volume will be **8** times larger

Scale factor for sides **3**
 Area will be **9** times larger
 Volume will be **27** times larger

Significant Figures

2670 to **1** significant figure is 3000

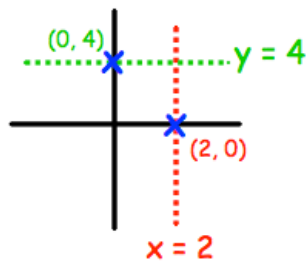
0.231 to **1** significant figure is 0.2

Lower/upper bounds

The length of a lorry is 19m to the nearest metre.

Lower bound: **18.5m**

Upper bound: **19.5m**



Stem and leaf diagrams **always** need a **key**

Multipliers

0.99	1% decrease
0.87	13% decrease
1.02	2% increase
1.20	20% increase

Expand $y(y + 7)$

$$y^2 + 7y$$

Questionnaires

- time scale
- leading question
- options overlapping
- options not covering all values
- box for other

ninths

0.111111... is one ninth

0.22222... is two ninths

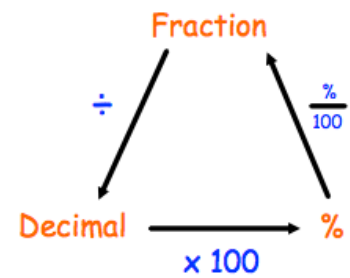
0.33333... is three ninths

0.44444... is four ninths and so on

Percentage increase: $\frac{\text{increase}}{\text{original}} \times 100$

Compound interest: $\text{initial} \times \text{multiplier}^{\text{time}}$

Stratified sampling: $\frac{\text{number in category}}{\text{total}} \times \text{sample size}$



add powers

$$y^{\textcircled{4}} \times y^{\textcircled{3}} = y^7$$

subtract powers

$$y^{\textcircled{8}} \div y^{\textcircled{2}} = y^6$$

Trial and improvement

Always remember the "checker"...
if solving to 1 decimal place and answer is between 4.8 and 4.9, try 4.85

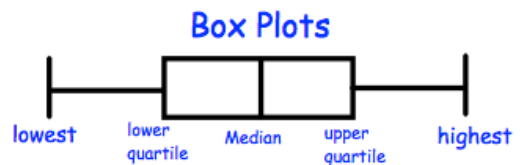
$$y = 4x + 1$$

gradient y-intercept
crosses y-axis at (0, 1)

$y = 4x + 2$ is parallel to $y = 4x + 1$

Independent events
If you want the probability of A and B,
multiply the probabilities.

Frequency density: $\frac{\text{Frequency}}{\text{Class width}}$



Interquartile range = upper quartile - lower quartile