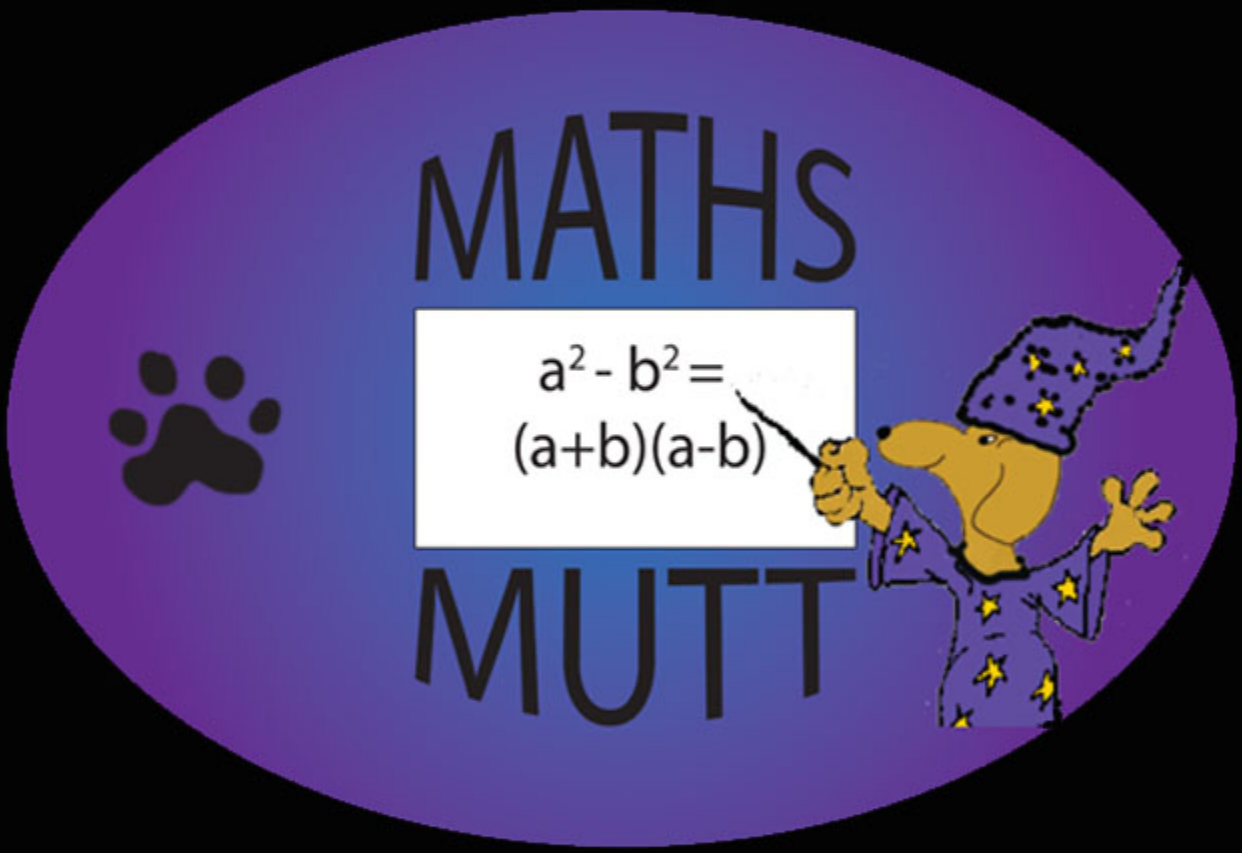
SQA Revision

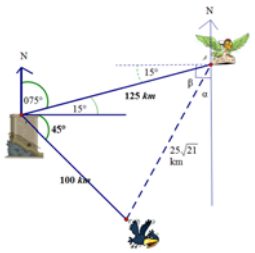


National 5 Maths Check List

National 5 Check List

Apps 1.1 : Applying trigonometric skills to triangles which do not have a right angle.

- Area of a triangle using trigonometry. ☐
- Using the Sine Rule. ☐
- Using the Cosine Rule to find a side. ☐
- Using the Cosine Rule to find an angle. ☐
- Using Bearings ☐



Apps 1.2 : Applying geometric skills to vectors.

- Scalars and Vectors. ☐
- Components. ☐
- Magnitude. ☐
- Position vectors. ☐
- Zero vector. ☐
- Equal vectors. ☐
- Adding vectors. ☐
- Subtracting vectors. ☐
- Finding 3D co-ordinates. ☐
- Using 3D co-ordinates. ☐

$\mathbf{v} = \begin{pmatrix} x \\ y \\ z \end{pmatrix}$ has magnitude $|\mathrm{v}| = \sqrt{x^2 + y^2 + z^2}$

For the points $A(x_A, y_A)$ $B(x_B, y_B)$,

$\overrightarrow{AB} = \begin{pmatrix} x_B \\ y_B \end{pmatrix} - \begin{pmatrix} x_A \\ y_A \end{pmatrix}$

Notes

Apps 1.3 : Applying numerical skills to fractions and percentages.

- Back / reverse percentage. ☐
- Appreciation. ☐
- Depreciation. ☐
- Compound interest. ☐
- Adding/subtracting fractions. ☐
- Multiplying fractions. ☐
- Dividing fractions. ☐
- Calculating fractions of amounts. ☐
- Algebraic fractions. ☐

let x = original cost, so $100\%\,x$ = original cost

$$\text{selling cost} = x + 17.5\%\,x = 117.5\%\ x$$

$$\Rightarrow \text{selling cost} = \frac{117.5x}{100} = 1.175x$$

$$\Rightarrow £150 = 1.175x$$

$$\Rightarrow \frac{150}{1.175} = x$$

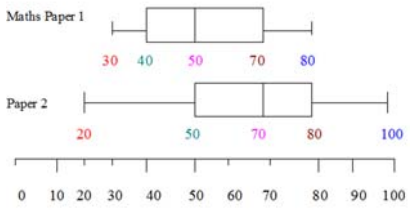
$$\Rightarrow 127.659 = x$$

$$\Rightarrow x = £127.66$$

The pre VAT price is £127.66

Apps 1.4 : Applying statistical skills to analysing data.

- Mean/Median/Mode/Range. ☐
- 5 figure summary. ☐
- Inter quartile range. ☐
- SIQR (Semi Inter Quartile Range). ☐
- Box plot. ☐
- Standard Deviation. ☐



Notes

National 5 Check List

E&F 1.1 : Applying numerical skills to simplify surds/ expressions using the laws of indices.

- Rules for surds. ☐
- Simplifying surds. ☐
- Rationalising surds. ☐
- Using surds for exact value answers. ☐
- Laws of Indices. ☐
- Manipulating indices. ☐

$$\frac{a}{\sqrt{b}} = \frac{a \times \sqrt{b}}{\sqrt{b} \times \sqrt{b}} = \frac{a\sqrt{b}}{b}$$

$$\frac{a}{b+\sqrt{c}} = \frac{a}{b+\sqrt{c}} \times \frac{(b-\sqrt{c})}{(b-\sqrt{c})} \quad \text{note this is multiplying by 1}$$

$$= \frac{a(b-\sqrt{c})}{b^2-c}$$

E&F 1.2 : Applying algebraic skills to manipulate expressions.

- Factors. ☐
- Removing single brackets. ☐
- Removing pairs of brackets. ☐
- Factorising using common factors. ☐
- The difference of two squares. ☐
- Completing the square. ☐

$$a^2 - b^2 = (a-b)(a+b)$$

Notes

National 5 Check List

E&F 1.3 : Applying algebraic skills to algebraic fractions.

$$\frac{1}{x}+\frac{2}{3x}=\frac{3x+2x}{3x^2}$$
$$=\frac{5x}{3x^2}$$
$$=\frac{5\cancel{x}}{3\cancel{x}^2}$$
$$=\frac{5}{3x}$$

- Algebraic fractions. ☐
- Solving equations containing algebraic fractions. ☐
- Adding and subtracting algebraic fractions. ☐

E&F 1.4: Applying geometric skills linked to the use of formulae.

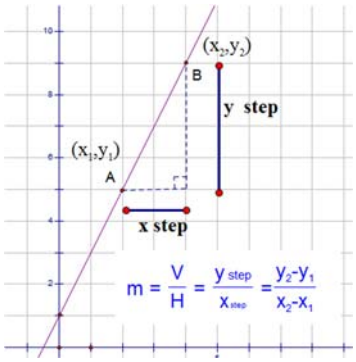
$$\text{Fraction of circle}=\frac{angle\ at\ centre}{360^\circ}$$
$$=\frac{length\ of\ arc}{\pi d}$$
$$=\frac{area\ of\ sector}{\pi r^2}$$

- Using the gradient formula. ☐
- Circle - arcs, sectors overview. ☐
- Circle - calculating length of arcs. ☐
- Circle - calculating the area of a sector. ☐
- Volume of a sphere. ☐
- Volume of a cone. ☐
- Volume of a pyramid. ☐
- Significant figures. ☐
- ☐

Notes

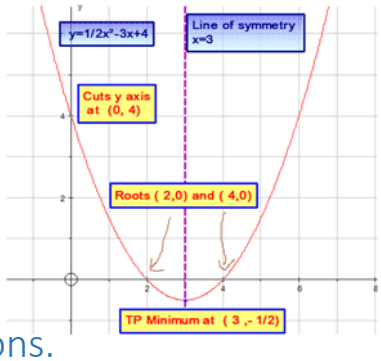
Rel 1.1 : Applying algebraic skills to linear equations.

- The Gradient formula. ☐
- The equation of a straight line : y = mx + c. ☐
- The equation of a straight line : y -b = m(x – a) . ☐
- Plotting straight line graphs. ☐
- Finding equations from straight line graphs. ☐
- Solving equations. ☐
- Solving inequalities (inequations). ☐
- Simultaneous equations : graphical method. ☐
- Simultaneous equations : solving by elimination. ☐
- Simultaneous equations : solving by substitution. ☐
- Changing the subject of the formula. ☐



Rel 1.2 : Applying algebraic skills to graphs of quadratic relationships.

- Quadratic graphs. ☐
- Sketching quadratic functions. ☐
- Graph sketching from completed square form. ☐



Rel 1.3 : Applying algebraic skills to quadratic equations.

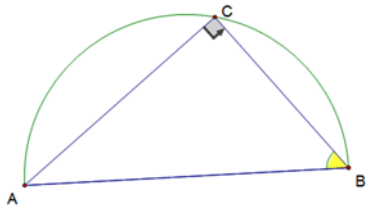
- Quadratic equations. ☐
- Finding roots of quadratics by factorising. ☐
- Using the discriminant. ☐
- Using the quadratic formula. ☐

The discriminant of the Quadratic equation $ax^2 + bx + c = 0$ is $b^2 - 4ac$

Notes

Rel 1.4 : Applying geometric skills to lengths, angles and similarity.

- ☐ The theorem of Pythagoras.
- ☐ Finding the length of the hypotenuse.
- ☐ Finding the length of a shorter side.
- ☐ The converse of the theorem of Pythagoras.
- ☐ Hidden Pythagoras.
- ☐ Co-ordinates and Pythagoras.
- ☐ Circle - Pythagoras in a circle.
- ☐ Circle – the angle in a semi-circle.
- ☐ Scale factor.
- ☐ Similar shapes.
- ☐ Similar triangles.
- ☐ Scaled area.
- ☐ Scaled volume.

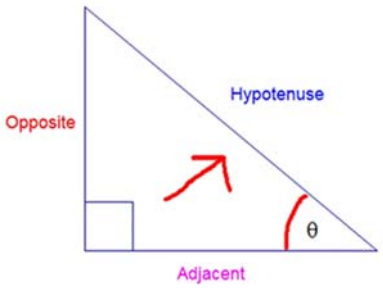


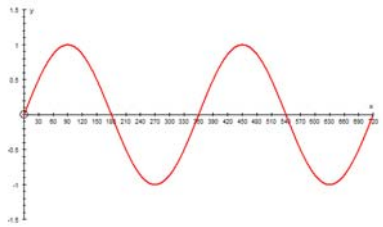
$$\text{Scaled Area} = (\text{scale factor})^2 \times \textit{original area}$$

$$\text{Scaled Volume} = (\text{scale factor})^3 \times \textit{original volume}$$

Rel 1.5 : Applying trigonometric skills to graphs and identities.

- ☐ Trigonometry – Using Sine. (Sin)
- ☐ Trigonometry – Using Cosine. (Cos)
- ☐ Trigonometry – Using Tangent. (Tan)
- ☐ Trigonometry – Using Soh Cah Toa .
- ☐ The graph of the sine function.
- ☐ The graph of the cosine function.
- ☐ The graph of the tan function.
- ☐ Amplitude.
- ☐ Period.
- ☐ CAST.
- ☐ Graphs of y=ksin(ax±b)+c , y=kcos(ax±b)+c
- ☐ Solving trigonometric equations.
- ☐ Using trigonometric identities.





Notes