think about units. length cm, m
area cm^2, m^2
volume cm^3, m^3

Perimeter = distance around the shape

Area = space inside the shape

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Trapezium

Area of a trapezium $= \frac{1}{2}(a+b)h$ — add together the parallel sides, halve it, then multiply by the height.

Volume of a prism = area of cross section × length — look at the shape at the end and work out the area, then multiply by length

Where r is the radius and d is the diameter:

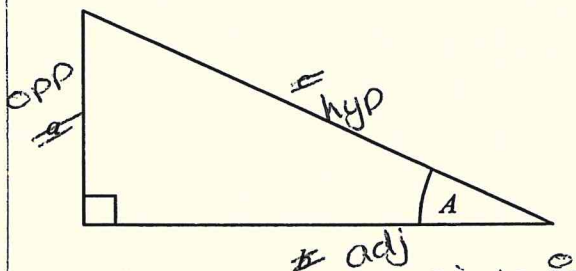
Circles

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

Remember: Chicken pie is delicious Apple pies are too

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

longest

$a^2 + b^2 = c^2$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$\sin A = \frac{a}{c}$ $\cos A = \frac{b}{c}$ $\tan A = \frac{a}{b}$

SOH CAH TOA $\sin A = \frac{opp}{hyp}$ $\cos A = \frac{adj}{hyp}$ $\tan A = \frac{opp}{adj}$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued $= P\left(1+\frac{r}{100}\right)^n$

eg. £2000 invested at 3% per annum for 4 years.
you do 2000×1.03^4

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P (A or B) = P (A) + P (B) − P (A and B)

END OF EXAM AID

Trapezium, add parallel sides, halve, then multiply by height

Higher Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a+b)h$

Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

Quadratic formula

The solution of $ax^2 + bx + c = 0$

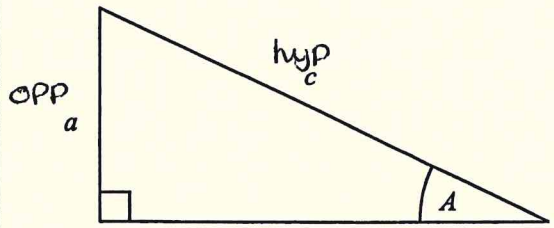
where $a \neq 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Use this when the question says give answer to x decimal places.

On non calc papers you should factorise

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

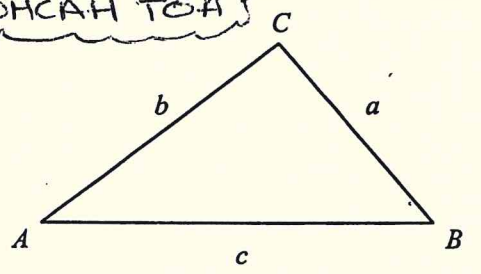
In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

adj b

SOHCAH TOA

$\sin = \frac{OPP}{hyp}$ $\cos = \frac{adj}{hyp}$ $\tan = \frac{OPP}{adj}$



In any triangle ABC where a, b and c are the length of the sides:

sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

cosine rule: $a^2 = b^2 + c^2 - 2bc\cos A$

can rearrange to: $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

Area of triangle $= \frac{1}{2}ab\sin C$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued $= P\left(1 + \frac{r}{100}\right)^n$

eg: £2000 invested at 3% per annum for 4 years

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

P (A or B) = P (A) + P (B) – P (A and B)

$P(A \cap B) = P(A|B) \times P(B)$

P (A and B) = P (A given B) P(B)

END OF EXAM AID