FOCUS 8/9 TASKS - Set 1

Each of the 30 topics is covered once within the 5 sheets

Sheet 1A

Proportion problems	Q1
Completed square-find the vertex	Q2
Quadratic inequalities	Q3
Equation of a tangent to a circle	Q4
3D trigonometry and Pythagoras	Q5
Area under a graph	Q6

Sheet 1B

Surds	Q1
Non linear simultaneous equations	Q2
Algebraic fractions	Q3
Similar triangle problems	Q4
Geometric Proof and 'show that'	Q5
Probability - dependent events	Q6

Sheet 1C

Iteration	Q1
nth term of quadratic sequences	Q2
Rearranging formulae	Q3
Defining inequalities for a region	Q4
Transformations and invariance	Q5
Venn diagrams	Q6

Sheet 1D
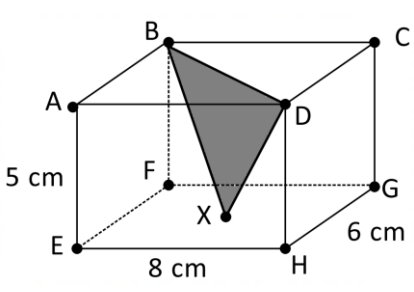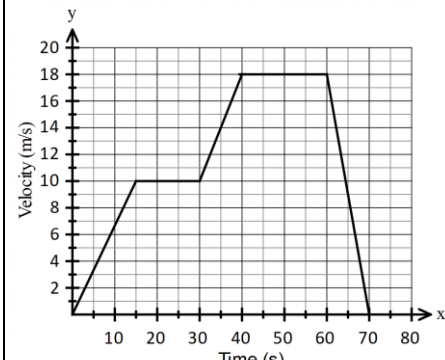
Indices	Q1
Functions - inverse and composite	Q2
Equating coefficients / identities	Q3
Equations of perpendicular lines	Q4
Mixed areas	Q5
Vector Proofs	Q6

Sheet 1E

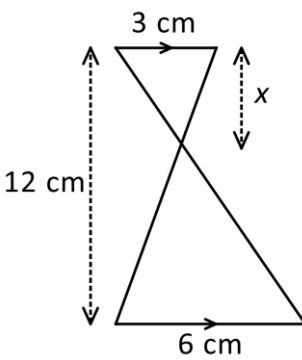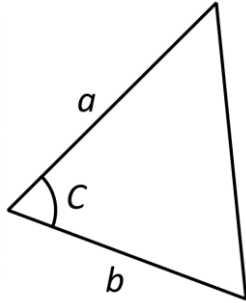| Quadratic formulae	Q1
Sketching transformed graphs	Q2
Calculations- exact trig values	Q3
Sine cosine rule	Q4
Frustums cones spheres	Q5
Median from a histogram	Q6

FOCUS 8/9 TASK 1A

NAME _____

SKILLS CHECK

Simplify $$\sqrt{52} \times \sqrt{26}$$	Factorise $$9x^2 + 9x - 4$$	Work out $$2\frac{1}{2} \times 1\frac{1}{3}$$	Solve $$4x - 3 = 2 - x$$
Find the equation of the line with gradient 4 passing through (-1,3)	Speed = 48 km/h Time = 35 minutes Distance = ?	Calculate 85% of £42	Simplify $$\frac{2a}{5} + \frac{a}{3}$$

QUESTION 1	QUESTION 2	QUESTION 3
y is directly proportional to x. x is inversely proportional to t When $y = 8, x = 2$ and $t = 6$. Find the value of t when $y = 96$	Express $2x^2 - 12x - 5$ in completed square form State the coordinates of the vertex of the graph $y = 2x^2 - 12x - 5$	Solve $$x^2 - 16x + 48 \le 0$$

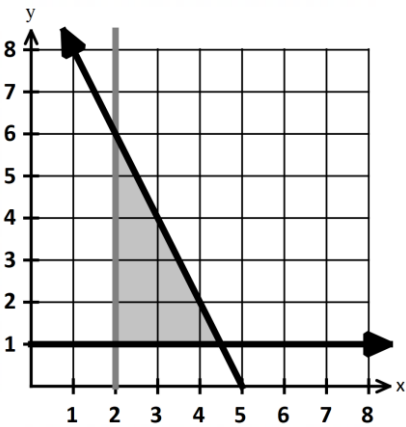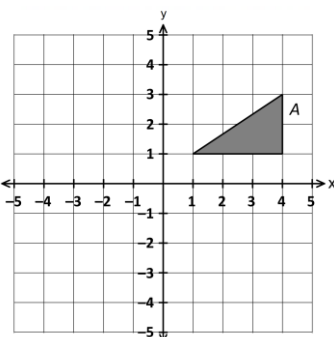| QUESTION 4	QUESTION 5	QUESTION 6
A circle has equation $x^2 + y^2 = 10$ Find the equation of the tangent to the circle at point (1,3)	X is the midpoint of FH. Calculate angle DXB correct to the nearest degree 	Use the velocity time graph to calculate distance covered in the first 40 seconds

FOCUS 8/9 TASK 1B

NAME _____

SKILLS CHECK

Simplify $\sqrt{28} \times \sqrt{21}$	Factorise $15x^2 - 31x + 10$	Work out $2\frac{2}{3} \div \frac{1}{5}$	Solve $\frac{x}{3} - 4 = x + 2$
Find the equation of the line with gradient 3 passing through (-3 , 2)	Force = 8N Area = 0.25 m² Pressure =	Increase £48 by 15%	Simplify $\frac{x+3}{4} + \frac{x}{3}$

QUESTION 1	QUESTION 2	QUESTION 3
Show that $\frac{(\sqrt{12}-\sqrt{3})^2}{\sqrt{27}+3}$ can be written in the form $a(b+\sqrt{3})$. Find the value of a and b	Solve the simultaneous equations. $$y = 2 - x$$ $$x^2 + y^2 = 20$$	Simplify $$\frac{6x^2 + x - 1}{9x^2 - 1} \times \frac{6x + 2}{2x + 1}$$

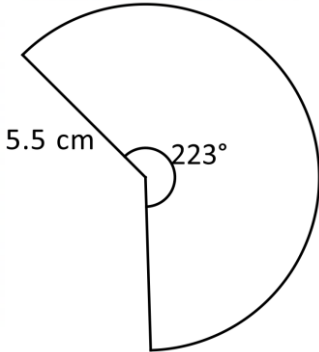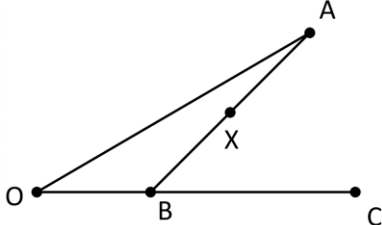| QUESTION 4	QUESTION 5	QUESTION 6
Calculate x 3 cm x 12 cm 6 cm	Prove that the area of the triangle is $\frac{1}{2}absinC$ a C b	There are 10 red counters and x blue counters in a bag. 2 counters a removed from the bag. The probability that both counters are blue is $\frac{1}{8}$. How many counters are there altogether?

NAME _____

SKILLS CHECK

Simplify $\sqrt{60} \times \sqrt{12}$	Factorise $30x^2 - 13x - 10$	Work out $2\frac{1}{5} - 1\frac{3}{4}$	Solve $\frac{x-2}{2} = \frac{x+2}{3}$
Find the equation of the line with gradient -2 passing through (5 , 1)	Density = 0.2 g / cm³ Mass = 8 g Volume = ?	Calculate 2.5% of £32	Simplify $\frac{x+1}{3} - \frac{x-2}{5}$

QUESTION 1	QUESTION 2	QUESTION 3
Using $x_{n+1} = \frac{4}{x_n^2+3}$ with $x_0 = 2$ Find the values of x_1, x_2, x_3 (correct to 2 d.p.)	Find the nth term $6, 13, 22, 33, 46$	Make x the subject of the formula $y + ax = bx - c$

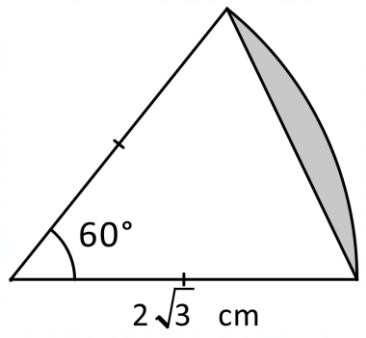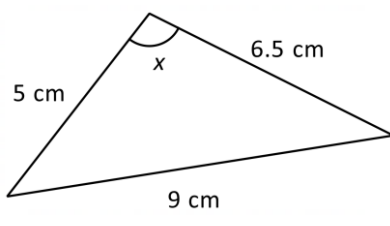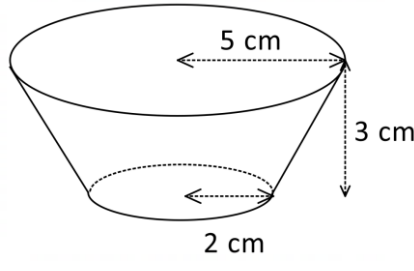| QUESTION 4	QUESTION 5	QUESTION 6
Write down the three inequalities that define the shaded region	Write down the coordinates of the invariant point(s) when the triangle is reflected in the line x = 1 and then rotated through 180 about point (1,1)	In a class of 40 students there are 2 students who do not study Maths or Physics , 11 students who study only Maths and 14 students who study Maths and Physics Given that a student picked at random studies physics what is the probability that they also study maths?

FOCUS 8/9 TASK 1D

NAME _____

SKILLS CHECK

Simplify $\sqrt{32} \times \sqrt{24}$	Factorise $25 - 64x^2$	Work out $3\frac{1}{2} \times 1\frac{1}{10}$	Solve $\frac{3}{x-2} = \frac{1}{x+3}$
Find the equation of the line with gradient 0.5 passing through (-4, 2)	Mass = 40 g Density = 160 g/cm³ Volume = ?	Express 37 out of 40 as a percentage	Simplify $\frac{x+3}{2} - \frac{x-1}{4}$

QUESTION 1	QUESTION 2	QUESTION 3
Solve $32^{\frac{2}{5}} \times 2^x = 8^{-\frac{5}{3}}$	$f(x) = 2x + 1 \quad g(x) = 2x^2$ Find an expression for $gf(x)$	Work out the value of a, b and c $(ax - 1)(3x + b) + c$ $\equiv 15x^2 + 17x - 4$
QUESTION 4	**QUESTION 5**	**QUESTION 6**
A straight line, L, passes through the point with coordinates (2, -4) and is perpendicular to the line with equation $2y + 4x = 5$. Find an equation of the straight line L.	Calculate the area (correct to 1 d.p.) 5.5 cm 223°	OA = a OB = b X is the midpoint of AD OB : BC : = 1 : k If XC = $\frac{7}{2}b - \frac{1}{2}a$ find k A X O B C

FOCUS 8/9 TASK 1E

NAME _____

SKILLS CHECK

Simplify $$\sqrt{20} \times \sqrt{35}$$	Factorise $$12x^2 + 25x + 12$$	Work out $$1\frac{2}{5} + 1\frac{3}{4}$$	Solve $$4(x - 3) = 3x - 1$$
Find the equation of the line with gradient 5 passing through (-1,-4)	Pressure = 10 n/m² Force = 25 N Area = ?	Decrease £72 by 1.5%	Simplify $$\frac{x - 1}{2} - \frac{x - 3}{4}$$

QUESTION 1	QUESTION 2	QUESTION 3
Solve $$\frac{5 - 3x}{2x + 1} = 3x - 2$$ (answers correct to 2 d.p.)	Sketch the graph $$y = \cos x + 2$$	Calculate the area giving your answer in the form $a\pi + b\sqrt{3}$ 60° $2\sqrt{3}$ cm
QUESTION 4	**QUESTION 5**	**QUESTION 6**
Calculate x (correct to 1 decimal place) 6.5 cm x 5 cm 9 cm	Calculate the volume (correct to 1 decimal place) 5 cm 3 cm 2 cm	Calculate an estimate of the median (correct to 2 d.p.) Frequency Density Mass (g)