FOCUS 8/9 TASKS - Set 2

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

Sheet 2A

Proportion problems	Q1
Completed square to find the vertex	Q2
Quadratic formulae rearranging first	Q3
Non linear simultaneous equations	Q4
Geometric Proof and 'show that'	Q5
Median from a histogram	Q6

Sheet 2B

Equating coefficients / identities	Q1
Sketching transformed graphs	Q2
Mixed areas	Q3
Calculations involving exact trig values	Q4
Sine cosine rule	Q5
Venn diagrams	Q6

Sheet 2C

Surds	Q1
Indices	Q2
Algebraic fractions	Q3
Equation of a tangent to a circle	Q4
Area under a graph	Q5
Probability - dependent events	Q6

Sheet 2D

Iteration	Q1
nth term of quadratic sequences	Q2
Rearranging formulae	Q3
Quadratic inequalities	Q4
Defining inequalities for a region	Q5
Frustums cones spheres	Q6

Sheet 2E

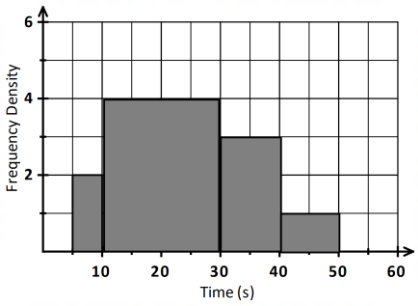
Functions - inverse and composite	Q1
Equations of perpendicular lines	Q2
Similar triangle problems	Q3
3D trigonometry and Pythagoras	Q4
Transformations and invariance	Q5
Vector Proofs	Q6

FOCUS 8/9 TASK 2A

NAME .....

SKILLS CHECK

Simplify $\sqrt{3}\,(2+3\sqrt{3}\,)$	Factorise $10x-8x^2-3$	Solve $1\frac{1}{2}\times x=\frac{2}{5}$	Solve $3x-4<2x+1$
Find the equation of the line passing through (1, 4) and (3, 8)	Speed = 72 km/h Distance = 24 km Time = ?	Calculate 0.5% of £108	Simplify $\frac{x}{4}+\frac{x}{2}-\frac{x}{5}$

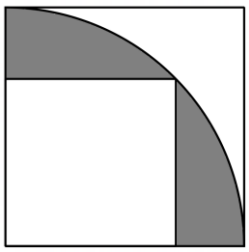
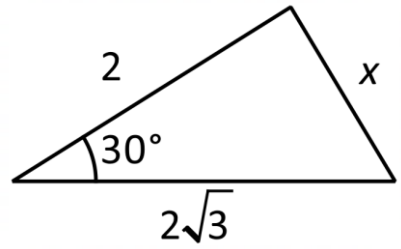
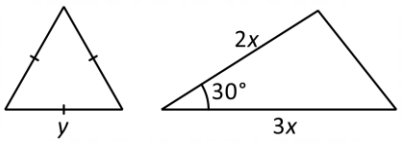
QUESTION 1	QUESTION 2	QUESTION 3
r is directly proportional to the square root of s. s is inversely proportional to the square of t When $r=32, s=64$ and $t=4$. Find the value of t when r = 4	Express $3x^2-12x-2$ in completed square form State the coordinates of the vertex of the graph $y=3x^2-12x-2$	Solve $\frac{6+3x}{x-1}=3x-2$ (answers correct to 2 d.p.)
QUESTION 4	**QUESTION 5**	**QUESTION 6**
Solve the simultaneous equations. $y=x+2$ $2x^2+y^2=3$	Prove that the angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the circumference.	Calculate an estimate for the median time. (correct to 2 d.p.) 

FOCUS 8/9 TASK 2B

NAME .....

SKILLS CHECK

Simplify $2\sqrt{2}\,(6+\sqrt{2}\,)$	Factorise $18x-8x^2-9$	Solve $y+1\frac{1}{2}=3\frac{2}{5}$	Solve $2x-1\geq 8-x$
Find the equation of the line passing through (-1, 4) and (-5, 12)	Mass = 50g Volume = 80 cm^3 Density =	Increase £660 by 2.5%	Simplify $\frac{3x}{2}+\frac{x}{4}-\frac{2x}{3}$

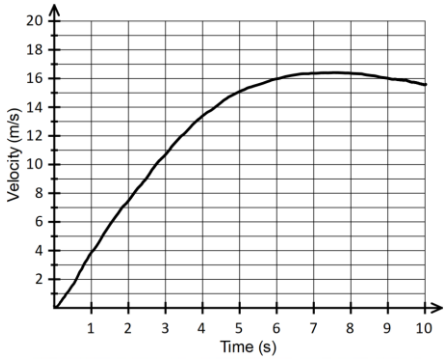
QUESTION 1	QUESTION 2	QUESTION 3
Work out the value of a and b $\frac{ax^2-3x+b}{x+1}\equiv x-4$	Sketch the graph $y=\cos(x-90°)$	Express the shaded area as a percentage of the area of the large square (correct to 1 d.p.) 
QUESTION 4	**QUESTION 5**	**QUESTION 6**
Calculate x 	The two triangles have the same area. Show that $x^2=\frac{\sqrt{3}}{6}y^2$ 	20 cakes were tested for weight and icing. 7 cakes failed the test for weight and 6 failed the test for icing. 9 cakes passed both tests. A cake is chosen at random. Given that the cake failed the weight test, what is the probability that it also failed the icing test?

FOCUS 8/9 TASK 2C

NAME .....

SKILLS CHECK

Simplify $4\sqrt{2}\,(2-2\sqrt{2}\,)$	Factorise $12-7x-12x^2$	Solve $y-\frac{3}{4}=\ 2\frac{1}{3}$	Solve $5x-1\geq\ 2x-2$
Find the equation of the line passing through (4, 4) and (2, 12)	Distance = 2.5 km Time = 12 minutes Speed = ?	40% of £x = £250 Find x	Simplify $\frac{x+1}{2}+\frac{x-2}{4}-\frac{2x}{3}$

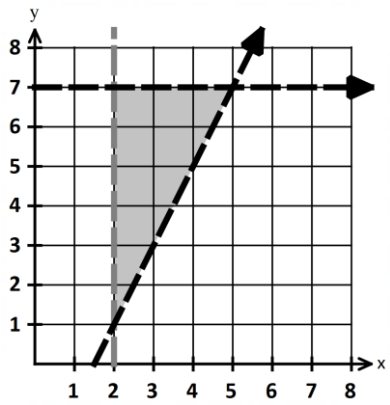
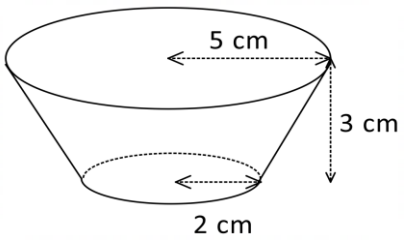
QUESTION 1	QUESTION 2	QUESTION 3
Show that $\frac{\sqrt{8}-1}{(\sqrt{2}-1)^2}$ can be written in the form $a+b\sqrt{2}$. Find the value of a and b	$2^x=\frac{1}{16}\quad 8^y=128\quad 4^z=\frac{1}{8}$ Work out the value of $x+y+\frac{1}{z}$	Simplify $\frac{16x^2-9}{8x^2+10x+3}\div\frac{4x-3}{4x+3}$
QUESTION 4	**QUESTION 5**	**QUESTION 6**
A circle has equation $x^2+y^2=8$ Find the equation of the tangent to the circle at point $(-2,-2)$	Using the velocity time graph calculate an estimate of the distance travelled between t = 3 and t = 8  	A bag contains red and blue counters in the ratio 3:4. Two counters are removed. The probability of picking 2 blue counters is $\frac{20}{63}$? How many counters are left in the bag?

FOCUS 8/9 TASK 2D

NAME .....

SKILLS CHECK

Simplify $3\sqrt{2}\,(2\sqrt{2}-3)$	Factorise $14+10x-4x^2$	Solve $y \div 1\frac{1}{5} = \frac{2}{3}$	Solve $\frac{3x}{2}-1 \leq 5$
Find the equation of the line passing through (-5, -6) and (-3, 12)	Force = 9 N Area = 0.3 m^2 Pressure =	5% of £x = £40 Find x	Simplify $\frac{x-1}{2}-\frac{x-1}{4}+\frac{x}{3}$

QUESTION 1	QUESTION 2	QUESTION 3
Using $x_{n+1} = 4+\frac{4}{x_n^2}$ with $x_0 = 2$ Find the values of x_1, x_2, x_3 Correct to 2 d.p.	Find the nth term $-1, 3, 13, 29, 51$	Make x the subject of the formula $a\sqrt{x} = c - b\sqrt{x}$
QUESTION 4	**QUESTION 5**	**QUESTION 6**
Solve $8x^2-2x-3>0$	Write down the three inequalities that define the shaded region 	Calculate the total surface area of the frustum (correct to 1 d.p.) 

FOCUS 8/9 TASK 2E

NAME .....

SKILLS CHECK

Simplify $2\sqrt{3}\,(\sqrt{3}-3\,)$	Factorise $20x-12x^2-3$	Solve $y+1\frac{1}{5}=\ 4\frac{2}{3}$	Solve $\frac{x-4}{2}-1>x-5$
Find the equation of the line passing through (-1, -3) and (-3, 9)	Pressure = 0.2 N/m^2 Area = 4 m^2 Force = ?	Express 17 out of 40 as a percentage	Simplify $\frac{x+4}{3}-\frac{x-2}{5}+\frac{3x}{2}$

QUESTION 1

$f(x)=4-x^2\ \ g(x)=2x-1$

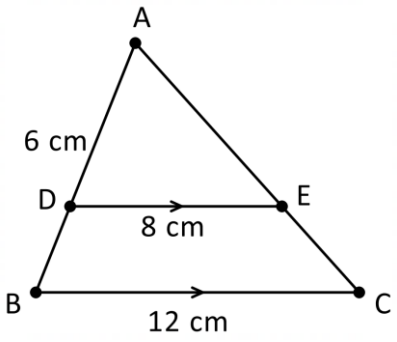
Find an expression for $fg(x)$

QUESTION 2

A straight line, L, passes through the point with coordinates (5, -1) and is perpendicular to the line with equation $4y\ +x\ =\ -2$.
Find an equation of the straight line L.

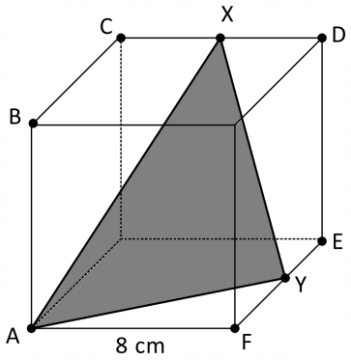
QUESTION 3

Calculate the length BD
(AD = 6 cm)



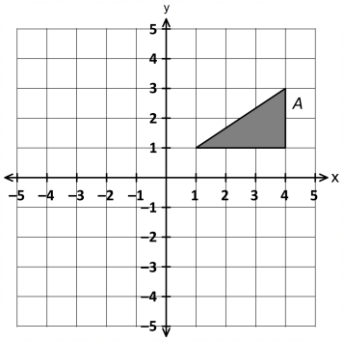
QUESTION 4

X and Y are midpoints on the edges of a cube with edge length 8 cm. Calculate the perimeter of triangle AXY correct to 1 d.p.



QUESTION 5

Write down the coordinates of the invariant point(s) when the triangle is reflected in the line y = 1 and then translated by $\begin{bmatrix}0\\4\end{bmatrix}$



QUESTION 6

OA = $\boldsymbol{a}$ OB = $\boldsymbol{b}$
Y is the midpoint of AB
OZ : ZY : = 3 : 1
Find the ratio OX : XB