FOCUS 7 TASKS - Set 2

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

Sheet 2A

Indices	Q1
Simultaneous equations	Q2
Factorising quadratics	Q3
Translating graphs	Q4
Calculations involving exact trig values	Q5
Histograms	Q6

Sheet 2B

Ratios	Q1
nth term of a quadratic sequence	Q2
Rational expressions	Q3
Lines and midpoints	Q4
Proof	Q5
Surface Area	Q6

Sheet 2C

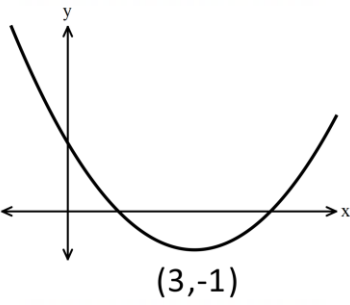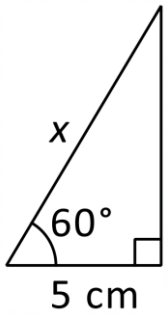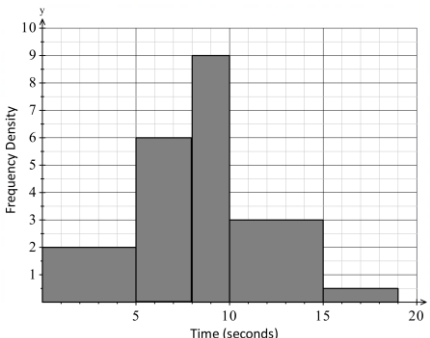|	
Direct proportion	Q1
Rearranging formulae	Q2
Composite functions	Q3
Volume	Q4
Area of a triangle (using sine)	Q5
Vectors	Q6

Sheet 2D

Upper and lower bounds	Q1
Expanding 3 brackets	Q2
Completing the square	Q3
Using the quadratic formula	Q4
Similarity 2D and 3D	Q5
Stratified sampling	Q6

Sheet 2E

Inverse proportion	Q1
Rationalising the denominator	Q2
Area and perimeter of a sector	Q3
Cosine Rule	Q4
Sine Rule	Q5
Probability	Q6

FOCUS 7 TASK 2A

NAME _____

SKILLS CHECK

Does the point (3,4) lie on the circle $x^2 + y^2 = 25$?	Work out $1\frac{1}{10} \times 2\frac{1}{2}$	Solve $\frac{x+3}{2} - 2 = x - 4$	Expand and simplify $(2 + \sqrt{2})(3 - \sqrt{2})$
State the gradient and the y intercept of the line $\frac{x}{y+2} = 4$	Force = 20 Area = 0.25 m² Pressure = ?	Increase £450 by 2.5%	Estimate $\frac{420 - 240}{0.44^2}$

QUESTION 1	QUESTION 2	QUESTION 3
Evaluate $$27^{-\frac{2}{3}} \times \left(\frac{1}{9}\right)^{\frac{3}{2}}$$	Solve simultaneously $$y = x + 1$$ $$y = x^2 - 3x + 4$$	Factorise $$12x^2 + x - 6$$

QUESTION 4	QUESTION 5	QUESTION 6
The graph of $y = f(x)$ is shown with minimum point (3, -1) (3,-1) Write down the coordinates of the minimum point of the curve with equation $y = f(x) + 2$	Without using a calculator work out the value of x x 60° 5 cm	The histograms shows the time taken to complete a puzzle How many people took longer than 9 seconds?

FOCUS 7 TASK 2B

NAME _____

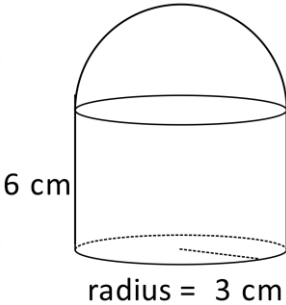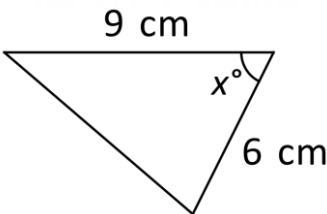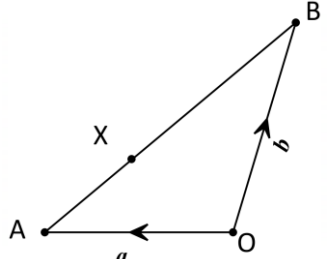## SKILLS CHECK

Does the point (-12,5) lie on the circle $x^2 + y^2 = 13^2$?	Work out $$4\frac{1}{10} - 3\frac{7}{8}$$	Solve $$2 - \frac{x+3}{3} = x + 3$$	Expand and simplify $$(5 - \sqrt{3})(3 - 2\sqrt{3})$$
State the gradient and the y intercept of the line $\frac{x-2}{y+6} = 2$	Density = 0.8 g/cm³ Mass = 24g Volume = ?	Decrease £84 by 7.5%	Estimate $$\sqrt{82 + 0.95^2}$$

QUESTION 1	QUESTION 2	QUESTION 3
The ratio of white to milk chocolates in a box is 3 : 5. The ratio of dark to milk chocolates is 1 : 2. If there at least 25 chocolates in total what is the smallest number of white chocolates possible?	Finding the nth term of the sequence 1, 5, 13, 25, 41	Simplifying $$\frac{2x^2 + x - 1}{x^2 - 1}$$

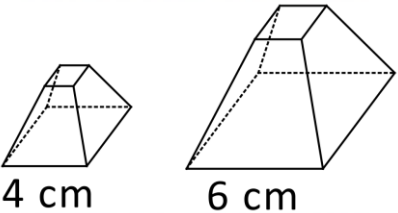| QUESTION 4	QUESTION 5	QUESTION 6
Find the equation of the line joining (4, -2) and (-2, 10)	Prove that the sum of 3 consecutive odd numbers is always a multiple of 3	Calculate the surface area of a hemisphere with diameter 16 cm Give your answer correct to 1 decimal place

FOCUS 7 TASK 2C

NAME _____

SKILLS CHECK

Does the point (12,-5) lie on the circle $x^2 + y^2 = 13$?	Work out $$\frac{7}{20} \times 1\frac{2}{5}$$	Solve $$\frac{x}{2} - \frac{x+3}{4} = -3$$	Expand and simplify $$(4 - 2\sqrt{3})(1 + 2\sqrt{3})$$
State the gradient and the y intercept of the line $\frac{x}{y} - 4 = 2$	Distance = 84 km Time = 1 hour 10 mins Speed = ?	Express 125 out of 500 as a percentage	Estimate $$\frac{6.3 - 4.8}{0.48^2}$$

QUESTION 1	QUESTION 2	QUESTION 3
x is directly proportional to the cube root of y. When x = 8, y = 8 Work out the value of y when x = 4	Make x the subject of the formula $y = \frac{ax+b}{cx}$	Given that $f(x) = 3x + 1$ and $g(x) = x^2 - 1$ find $gf(x)$ Evaluate $fg(-2)$

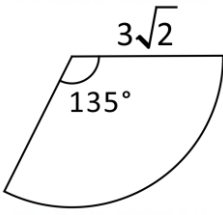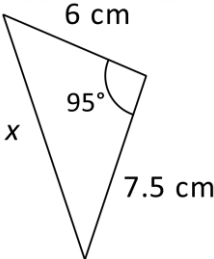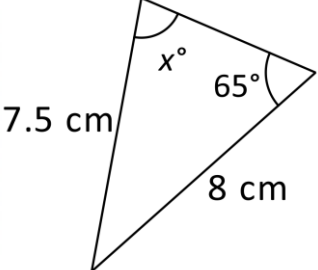| QUESTION 4	QUESTION 5	QUESTION 6
Calculate the volume correct to 1 d.p. 6 cm radius = 3 cm	Given that he area of the triangle is 23.4 cm^2 calculate and x to the nearest degree 9 cm $x°$ 6 cm	X divides AB such that the ratio AX:XB is 1:2 Write an expression for OX in terms of vectors a and b B X A a O

FOCUS 7 TASK 2D

NAME _____

SKILLS CHECK

Does the point (-1,-1) lie on the circle $x^2 + y^2 = 2$?	Work out $$\left(1\frac{2}{3}\right)^2$$	Solve $$\frac{x-3}{2} - \frac{x+3}{3} = -1$$	Expand and simplify $(5 - 2\sqrt{2})(3\sqrt{2} + 3)$
State the gradient and the y intercept of the line $\frac{x+3}{y} + 1 = 2$	Speed = 48 km per hour Time = 35 minutes Distance = ?	A price rises from £120 to £123. Calculate the percentage change	Estimate $$\frac{3.2 \times 14.9}{0.48^2}$$

QUESTION 1	QUESTION 2	QUESTION 3
Donna's weight is 60 kg, correct to the nearest 10 kg. Adey's weight is 83 kg, correct to the nearest kg. Work out the upper bound for difference between the weights.	Expand and simplify $(x + 4)(x - 1)(x + 2)$	Express $x^2 + 8x - 5$ in completed square form and write down the coordinates of the vertex of the graph $y = x^2 + 8x - 5$

QUESTION 4	QUESTION 5	QUESTION 6
Solve using the quadratic formula giving your answers correct to 1 decimal place $2x^2 - 7x - 3 = 0$	A and B are mathematically similar. If A has a volume of 24 cm³, work out the volume of B 4 cm 6 cm	A stratified sample of 50 students is needed for a survey. How many students from Year 7 should be included in the survey?

For Question 6:

Year	Number of students
7	180
8	194
9	200
10	218
11	208

FOCUS 7 TASK 2E

NAME _____

SKILLS CHECK

The point (6,-6) lie on the circle $x^2 + y^2 = 72^2$	Work out $$\frac{1}{10} + \frac{1}{2} \times \frac{3}{4}$$	Solve $$\frac{x+2}{3} - \frac{x-1}{5} = 2$$	Expand and simplify $$\left(1 + 2\sqrt{2}\right)^2$$
State the gradient and the y intercept of the line $\frac{y}{x+1} - 2 = 2$	Force = 0.5 N Area = 0.25 m² Pressure = ?	A price falls from £320 to £272. Calculate the percentage change	Estimate $$\frac{124 \times 0.94}{5.59 \times 5.49}$$

QUESTION 1	QUESTION 2	QUESTION 3
y is inversely proportional to the square of x. When y = 64, x = 4 Work out the value of y when x = ¼	Rationalise the denominator $$\frac{3}{2 - \sqrt{3}}$$	Calculate the area , leave your answer in terms of π 3√2 135°

QUESTION 4	QUESTION 5	QUESTION 6
Calculate x correct to 1 d.p. 6 cm 95° x 7.5 cm	Calculate angle x correct to the nearest degree x° 7.5 cm 65° 8 cm	2 bags contain red and blue counters. Bag A has 1 red and 3 blue. Bag B has 2 red and 5 blue. 1 counter from each bag is picked at random. What is the probability of picking at least 1 blue counter?