

Name: _____

6th Form Scholarship Paper 2021

Date:

Time: 1 hour

Total marks available: 75

Total marks achieved: _____

Calculator Allowed

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series

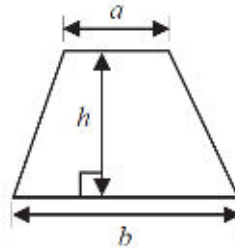
Sum to n terms, $S_n = \frac{n}{2} [2a + (n-1)d]$

The quadratic equation

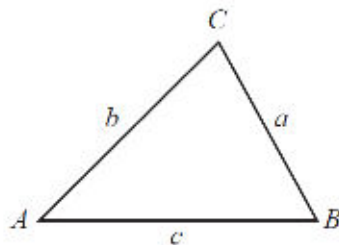
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

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

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



Trigonometry



In any triangle ABC

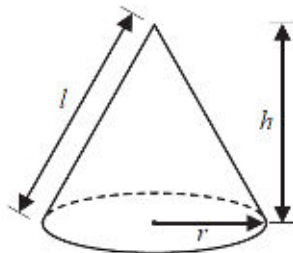
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

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

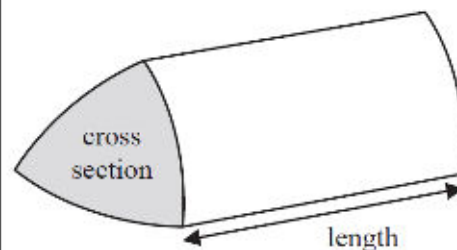
Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



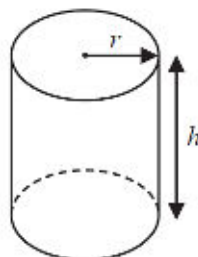
Volume of prism

= area of cross section $\times$ length



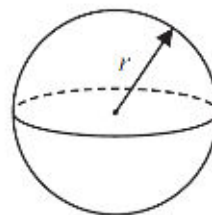
Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi r h$



Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$



Q1.

The integer N is greater than 120

When N is divided by 28 the remainder is 3

When N is divided by 120 the remainder is 3

Find the least value of N .

You must show your working.

.....

(Total for question = 3 marks)

Q2.

A shopkeeper sells a radio for \$27

For this selling price, the shopkeeper makes a profit of 8%

Calculate the selling price of the radio so that the shopkeeper would make a profit of 35%

\$

(Total for question = 3 marks)

Q3.

Michael's age is n years.

Navtej's age is three times Michael's age.

Indre is 8 years younger than Navtej and 20 years older than Michael.

Find the value of n . Show clear algebraic working.

$n = \dots\dots\dots$

(Total for question = 3 marks)

Q4.

Express as a single fraction in its simplest form

$$\frac{5}{3-2x} - \frac{2}{2+5x}$$

$\dots\dots\dots$

(Total for question = 3 marks)

Q5.

The diagram shows a half cylinder.

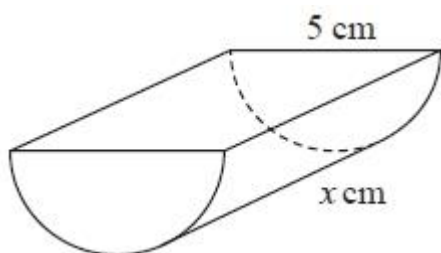


Diagram **NOT**
accurately drawn

The half cylinder has a length of x cm and a semi-circular cross section of diameter 5 cm.

The volume of the half cylinder is 35π cm³

Calculate the value of x .

$x =$

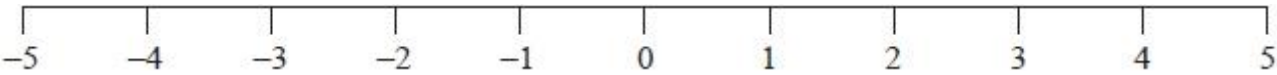
(Total for question = 3 marks)

Q6.

(a) Solve the inequality $x^2 - x - 6 < 0$

.....

(b) On the number line below represent your answer to part (a).



(2)

(Total for question = 6 marks)

Q7.

Here is $\triangle ABC$.

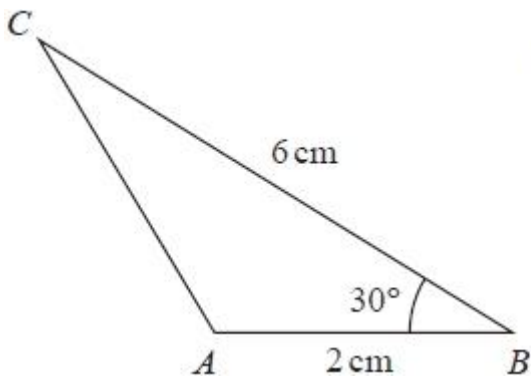


Diagram **NOT**
accurately drawn

(a) Calculate the area, in cm^2 , of $\triangle ABC$.

..... cm^2
(2)

Here is $\triangle PQR$.

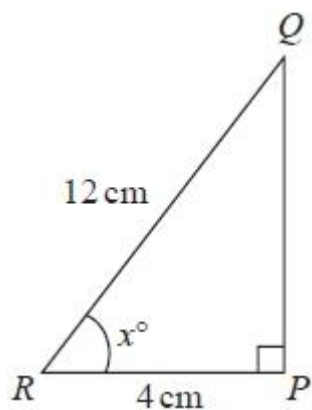


Diagram **NOT**
accurately drawn

(b) Calculate the value, to 3 significant figures, of x .

$x = \dots\dots\dots$

(2)

(Total for question = 4 marks)

Q8.

(a) Simplify fully $(5a^2b^3)^2$

$\dots\dots\dots$

(2)

(b) Simplify fully $\frac{(9x^4y^2)^{\frac{1}{2}}}{3x^2y^{-4}}$

$\dots\dots\dots$

(2)

(Total for question = 4 marks)

Q9.

There are 9 marbles in bag *A* and 11 marbles in bag *B*.

In bag *A*, there are 3 red marbles, 2 yellow marbles and 4 green marbles.
In bag *B*, there are 2 red marbles, 4 yellow marbles and 5 purple marbles.

Ted takes at random one marble from bag *A* and one marble from bag *B*.

Calculate the probability that the two marbles are **not** the same colour.

.....

(Total for question = 4 marks)

Q10.

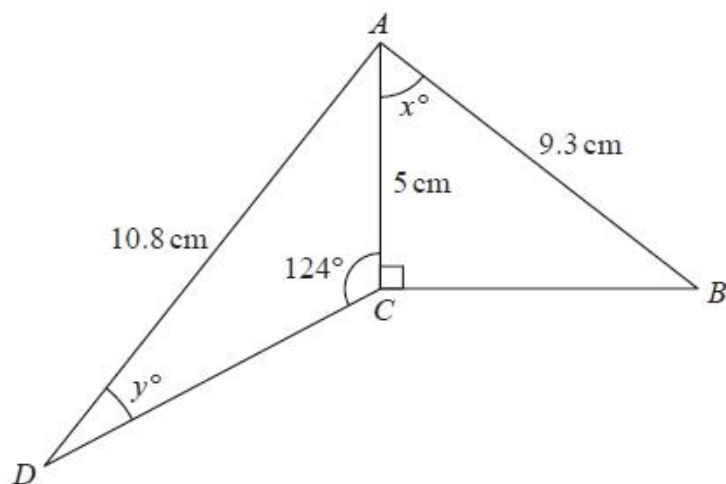


Diagram NOT
accurately drawn

Figure 1

Figure 1 shows a quadrilateral $ABCD$.

$AB = 9.3 \text{ cm}$ $AC = 5 \text{ cm}$ $AD = 10.8 \text{ cm}$

$\angle ACD = 124^\circ$ $\angle ACB = 90^\circ$ $\angle CAB = x^\circ$ $\angle ADC = y^\circ$

Calculate to one decimal place,

(a) the value of x ,

(2)

(b) the value of y .

(3)

(Total for question = 5 marks)

Q11.

In a region of a country, two types of eagle, type *A* and type *B*, can be found.

In 2003 the ratio of the number of type *A* eagles to the number of type *B* eagles was 2 : 5

In 2015 the ratio of the number of type *A* eagles to the number of type *B* eagles was 4 : 3

From 2003 to 2015, the number of type *A* eagles had increased by 16

From 2003 to 2015, the number of type *B* eagles had decreased by 107

Calculate the number of type *B* eagles in this region in 2015

.....

(Total for question = 5 marks)

Q12.

Solve the simultaneous equations

$$\begin{aligned}2x^2 &= 11 - 3y^2 \\4x - y &= 5\end{aligned}$$

Show clear algebraic working.

(6)

(Total for question = 6 marks)

Q13.

In 2017, country *A* had a population of 2.35×10^7 people.

Of these people, 48% were male.

(a) Calculate the number of males in country *A* in 2017

(2)

Country *A* is divided into three regions. These three regions are called East Region, Central Region and West Region.

In 2017, the ratio of the number of males in the East Region to the number of males in the Central Region to the number of males in the West Region was 5 : 3 : 2

(b) Calculate the number of males in the Central Region in 2017
Give your answer in standard form.

(2)

In 2017, the number of females in the Central Region was 12.5% greater than the number of males in the Central Region.

(c) Calculate the number of females in the Central Region in 2017

(2)

In 2010, country *B* had a population of 2.5×10^7 people.

From 2010 to 2014, the population of country *B* increased by 2.4%
From 2014 to 2018, the population of country *B* decreased by 2.4%

(d) Calculate the population of country *B* in 2018

(2)

(Total for question = 8 marks)

Q14.

90 students from a sixth form college were each asked the following question.

"Do you study any of Biology (B), Chemistry (C) or Physics (P)?"

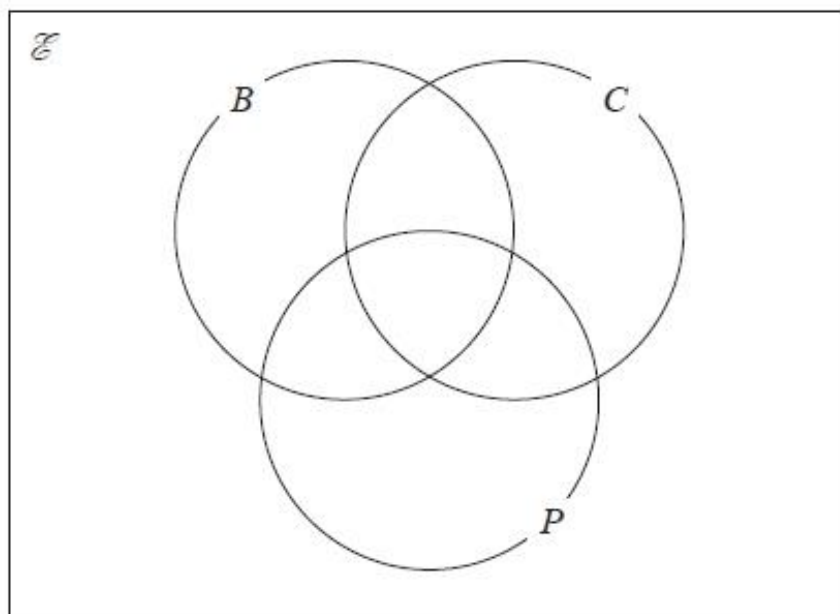
Of these 90 students

- 7 study all three subjects
- 15 study Biology and Chemistry
- 20 study Chemistry and Physics
- 37 study Chemistry
- 14 study Biology only
- 15 study Physics only

The number of these students who study Biology and Physics but not Chemistry is three times the number of these students who study none of these three subjects.

Let x be the number of these students who study none of these three subjects.

(a) Show all this information on the Venn diagram, giving the number of students in each appropriate subset, in terms of x where necessary.



(b) Find the value of x .

(c) Find

- (i) $n(B' \cap C)$
- (ii) $n(B \cup C \cup P)$
- (iii) $n(B \cap C \cap P')$

One of the students is to be chosen at random.
Given that this student studies Chemistry,

(d) find the probability that this student also studies Physics.

(Total for question = 10 marks)

Q15.

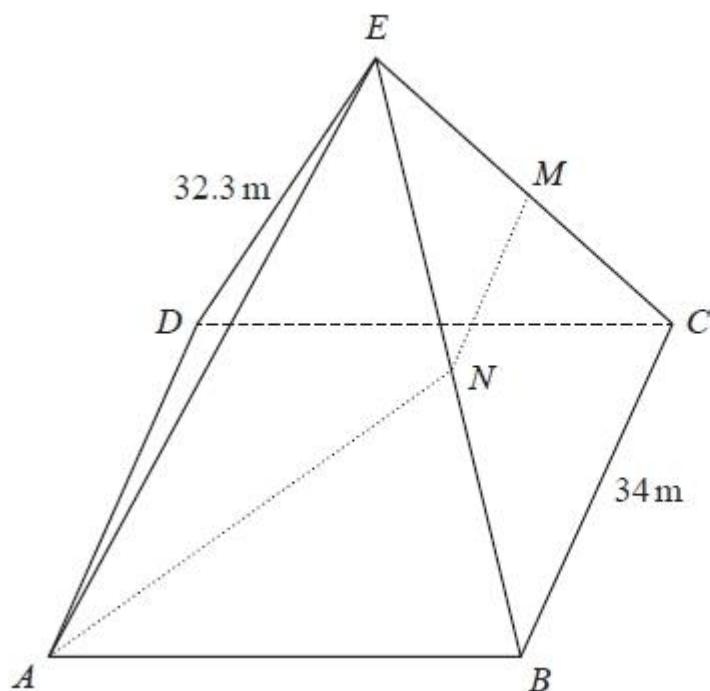


Diagram NOT
accurately drawn

The diagram shows a solid right pyramid $ABCDE$ with a square base $ABCD$ on a horizontal plane. The vertex E of the pyramid is vertically above the centre of the base.

$$BC = 34\text{ m} \quad EA = EB = EC = ED = 32.3\text{ m}$$

The point M is the midpoint of CE and the point N is the midpoint of BE .

Given that $AN + NM = x$ metres

(a) calculate the value, to 2 significant figures, of x .

$x = \dots\dots\dots$

(6)

(b) Calculate the size, to the nearest degree, of angle BAN .

.....°
(2)

(Total for question = 8 marks)

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Mark Scheme

Q1.

Q	Working	Answer	Mark	Notes									
	$28 = 2 \times 2 \times 7$ or 4×7 $120 = 2 \times 2 \times 2 \times 3 \times 5$ or 4×30 oe Or factor trees <table><tr><td></td><td>28</td><td>120</td></tr><tr><td>2</td><td>14</td><td>60</td></tr><tr><td>2</td><td>7</td><td>30</td></tr></table>		28	120	2	14	60	2	7	30			M1 For prime factorisation of 28 and 120 (may be at ends of a factor tree), must have $2 \times 2 \dots$ or $4 \times \dots$ or for multiples of 120 up to at least 840 or for multiples of 28 up to at least 840
	28	120											
2	14	60											
2	7	30											
	LCM (28, 120) = 840			A1 Allow $2 \times 2 \times 2 \times 3 \times 5 \times 7$									
		843	3	A1ft For adding 3 to their LCM. The M1 must be awarded. An answer with no working gains no marks									
Total 3 marks													

Q2.

Q	Working	Answer	Mark	Notes
	$\frac{27}{1.08}$ or $\frac{27}{108} \times 100 [=25]$			M1 For a correct method to find the original price.
	$"\frac{27}{1.08}" \times 1.35$ or $"\frac{27}{108} \times 100" + \frac{35}{100} \times "25"$ oe			M1 dep on previous method mark being awarded. For a correct method to increase their original price by 35%
		33.75	3	A1 oe Working not required, so correct answer scores full marks (unless from obvious incorrect working)
<i>Total 3 marks</i>				

Q3.

Q	Working	Answer	Mark	Notes
	Sight of $3n$ or $3n - 8$ or $n + 20$			M1 One correct expression seen. May be seen as part of an equation
	$n + 20 = 3n - 8$ oe			A1 Correct equation
		14	3	A1 dep on previous A mark awarded
<i>Total 3 marks</i>				

Q4.

Question	Working	Answer	Mark	Notes
	$\frac{5(2+5x)-2(3-2x)}{(3-2x)(2+5x)}$ (oe)		3	M1 for correct single fraction
	$\frac{10+25x-6+4x}{(3-2x)(2+5x)}$			Indep M1 for expansion of the correct numerator in single fraction Must be part of a fraction but ignore denominator for this mark. Allow a maximum of one arithmetic or sign error
		$\frac{4+29x}{(3-2x)(2+5x)}$ oe		A1 allow $6+11x-10x^2$ in the denominator do not ISW for this mark.
				<i>Total 3 marks</i>

Q5.

Question	Working	Answer	Mark
	$\frac{1}{2} \times \pi \times \left(\frac{5}{2}\right)^2 \times x (= 35\pi)$ oe		3
	$x = 35 \times \left(\frac{2}{5}\right)^2 \times 2$		
		11.2	

Notes	Total
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M1 oe	
M1 dep oe	
A1 oe SC If no marks awarded otherwise 5.6 or 2.8 given as final answer award B1	
	3

Q6.

Question	Working	Answer	Mark	AO	Sub-total	Total
(a)	Rewriting (or solving) $x^2 - x - 6 < 0$ as $(x-3)(x+2)$ (solving trinomial quadratic marking rules)	$x = 3$ and $x = -2$	M1 A1	1.3	4	
(b)	Open circles at ' $x = -2$ and $x = 3$ ' Line joining ' $x = -2$ and $x = 3$ '	$x < 3$ $x > -2$ (or $-2 < x < 3$)	A1ft A1ft (A2 ft) B1 ft B1 ft		2	6

Q7.

Question	Working	Answer	Mark	Notes
(a)	$\frac{1}{2}(2)(6)\sin 30^\circ$ oe			M1
		3	2	A1
(b)	$\cos x^\circ = \frac{4}{12}$ or $\sin x^\circ = \frac{[(\sin 90)]\sqrt{12^2 - 4^2}}{12}$ or $\tan x^\circ = \frac{\sqrt{12^2 - 4^2}}{4}$ or $\cos x^\circ =$ $\frac{12^2 + 4^2 - (\sqrt{12^2 - 4^2})^2}{2 \times 12 \times 4}$			M1 Complete method (e.g. Pythagoras followed by sine, cosine rule, etc.) Allow $8\sqrt{2}$ or awrt 11.3 for $\sqrt{12^2 - 4^2}$
		70.5	2	A1 awrt 70.5
Total 4 marks				

Q8.

Q	Working	Answer	Mark	Notes
(a)	$25a^4b^6$			M1 Any 2 terms correct $25a^4 \dots$ or $\dots a^4b^6$ or $25 \dots b^6$
		$25a^4b^6$	2	A1
(b)	$\frac{3x^2y^1}{3x^2y^{-4}}$ or $\frac{y^1}{y^{-4}}$			M1 Allow y for y^1
		y^5	2	A1 Working not required, so correct answer scores full marks (unless from obvious incorrect working)
<i>Total 4 marks</i>				

Q9.

Question	Working	Answer	Mark	Notes
				M1 One of $\frac{3}{9} \times \frac{2}{11}$ or $\frac{2}{9} \times \frac{4}{11}$ or $P(R, \text{not } R)$ ie $\frac{3}{9} \times \frac{9}{11}$ accept $\left(\frac{3}{9} \times \frac{4}{11} + \frac{3}{9} \times \frac{5}{11}\right)$ or $P(Y, \text{not } Y)$ ie $\frac{2}{9} \times \frac{7}{11}$ accept $\left(\frac{2}{9} \times \frac{2}{11} + \frac{2}{9} \times \frac{5}{11}\right)$ or $P(G, \text{not } G)$ ie $\frac{4}{9} \times 1$ accept $\left(\frac{4}{9} \times \frac{2}{11} + \frac{4}{9} \times \frac{4}{11} + \frac{4}{9} \times \frac{5}{11}\right)$
	$\left(\frac{3}{9} \times \frac{2}{11}\right) + \left(\frac{2}{9} \times \frac{4}{11}\right)$			M1 Or two of $\frac{3}{9} \times \frac{9}{11}$ accept $\left(\frac{3}{9} \times \frac{4}{11} + \frac{3}{9} \times \frac{5}{11}\right)$ or $\frac{2}{9} \times \frac{7}{11}$ accept $\left(\frac{2}{9} \times \frac{2}{11} + \frac{2}{9} \times \frac{5}{11}\right)$ or $\frac{4}{9} \times 1$ accept $\left(\frac{4}{9} \times \frac{2}{11} + \frac{4}{9} \times \frac{4}{11} + \frac{4}{9} \times \frac{5}{11}\right)$
	$1 - \left(\left(\frac{3}{9} \times \frac{2}{11}\right) + \left(\frac{2}{9} \times \frac{4}{11}\right)\right)$			M1 dep on both previous method marks being awarded. Attempt at correct calculation (oe)
		$\frac{85}{99}$	4	A1 oe awrt 0.86 awrt 85%
<i>Total 4 marks</i>				

Q10.

Question	Working	Answer	Mark
(a)	$\cos x = \frac{5}{9.3} [0.537...]$		2
		57.5	
(b)	$\frac{\sin 124}{10.8} = \frac{\sin y}{5}$ oe		3
	$y = \sin^{-1}\left(\frac{5 \sin 124}{10.8}\right)$ oe		
		22.6	

Question	Notes
(a)	M1 A fully correct method to find the value of x eg $\sin x = \frac{\sqrt{9.3^2 - 5^2}}{9.3}$ or $\tan x = \frac{\sqrt{9.3^2 - 5^2}}{5}$ or $90 - \sin^{-1}\left(\frac{5}{9.3}\right)$ or $\cos x = \frac{9.3^2 + 5^2 - \sqrt{9.3^2 - 5^2}}{2 \times 9.3 \times 5}$
	A1 awrt to 57.5
(b)	M1 A fully correct method to find the value of y
	M1dep on previous method mark being awarded. For rearranging to find a value of y or $\sin y = \frac{5 \times \sin 124}{10.8}$ Allow $\sin y =$ awrt 0.38 or $y = \sin^{-1}(\text{awrt } 0.38)$ oe
	A1 awrt 22.6
	Total 5 marks

Q11.

Q	Working	Answer	Mark	Notes
	$2x+16$ and $5x-107$			M1 or $X+16$ and $Y-107$ and $5X=2Y$
	$\frac{2x+16}{4} = \frac{5x-107}{3}$ oe			M1 dep Allow one sign error or $\frac{X+16}{Y-107} = \frac{4}{3}$ or Allow $2x+16=4y$ and $5x-107=3y$
	$[x=]34$			M1 dep on both previous Method marks. Using a correct method to solve equation(s) leading to $x = \dots$ or $y = \dots$ or $5x = \dots$ or $X = \dots$ or $Y = \dots$
	$5 \times "34" - 107$			M1 dep on previous mark. or $3 \times "21"$
		63	5	A1 Working not required, so correct answer scores full marks (unless from obvious incorrect working)
				<i>Total 5 marks</i>
Alternative				
	T is the total number of eagles in 2003 t is the total number of eagles in 2015			
	$\frac{2}{7}T+16$ and $\frac{5}{7}T-107$ or $\frac{4}{7}t-16$ and $\frac{3}{7}t+107$			M1 May be seen as part of a correct equation.
	$\frac{2}{7}T+16 = \frac{4}{7}t$ and $\frac{5}{7}T-107 = \frac{3}{7}t$ oe			M1 dep for 2 correct equations
	$t=147$ or $T=238$			M1 dep on both previous Method marks. Using a correct method to solve equation(s) leading to $T = \dots$ or $t = \dots$ or $5T = \dots$ or $3t = \dots$
	$\frac{3}{7} \times "147"$ or $\frac{5}{7} \times "238" - 107$			M1 dep on previous mark. Allow their 147 or their 238
		63		A1 Working not required, so correct answer scores full marks (unless from obvious incorrect working)

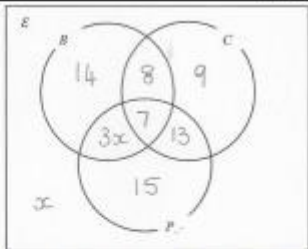
Q12.

Q	Working	Answer	Mark	Notes
	$2x^2 = 11 - 3(4x - 5)^2$ or $2\left(\frac{5+y}{4}\right)^2 = 11 - 3y^2$			M1 for correct substitution of the linear equation $4x - y = 5$ into the quadratic equation $2x^2 = 11 - 3y^2$ to form an (unsimplified) quadratic equation in either x or y . This mark can be implied by the second M mark.
	$2x^2 = 11 - 3(16x^2 - 40x + 25)$ or $2\left(\frac{25+10y+y^2}{16}\right) = 11 - 3y^2$			M1 for correct expansion of either their $(4x - 5)^2$ or $\left(\frac{5+y}{4}\right)^2$ in correct equation (not dependent on previous M mark)
	$25x^2 - 60x + 32 [= 0]$ or $25y^2 + 10y - 63 [= 0]$			A1 for a correct 3 term quadratic in either x or y dep on both previous M marks (oe e.g., $50x^2 - 120x + 64 [= 0]$, $50y^2 + 20y - 126 [= 0]$, etc. look out for all signs reversed)
	$(5x - 4)(5x - 8) [= 0]$ or $(5y - 7)(5y - 9) [= 0]$			M1 correct method for solving their 3-term quadratic – either by formula, completing the square or factorising. By factorising: brackets must expand to give 2 out of 3 correct terms. By formula: correct substitution into fully correct formula (allow 1 sign error). By completing the square: must see e.g., $25\left(x - \frac{6}{5}\right)^2 \pm \dots [= 0]$
	$4 \times "0.8" - y = 5$ or $4 \times 1.6 - y = 5$ or $4x - (-1.8) = 5$ or $4x - 1.4 = 5$ oe			M1 indep substituting their two x values into either equation leading to values for y or vice versa (not dependent on any previous M marks) – this mark can be implied by correct values (if no working seen). This mark can be implied by both correct pairs of values.
		(0.8, -1.8) (1.6, 1.4)	6	A1 for both correct pairs of x and y values (oe e.g., $x = \frac{4}{5}, y = -\frac{9}{5}$ and $x = \frac{8}{5}, y = \frac{7}{5}$) This mark is dependent on all previous marks. Correct answer(s) with no working scores no marks
				<i>Total 6 marks</i>

Q13.

Question	Working	Answer	Mark	Notes
(a)	$2.35 \times 10^7 \times 0.48$		2	M1 NB $2.35 \times 10^7 \times 48\%$ is not sufficient for this mark unless it leads to the correct answer.
		1.128×10^7 or 11 280 000		A1 Allow 1.13×10^7 oe eg 11.3×10^6
(b)	$\left(\frac{"11\ 280\ 000"}{10} \times 3\right)$		2	M1
		3.384×10^6		A1 Allow answers between 3.38×10^6 and 3.39×10^6 inclusive must be in standard form. Allow a final answer of 3.4×10^6 if an acceptable value is seen not written in standard form.
(c)	$"3\ 384\ 000" \times 1.125$		2	M1 NB $"3\ 384\ 000" \times 112.5\%$ is not sufficient for this mark unless their answer is equal to their value $\times 1.125$
		3.807×10^6 or 3 807 000		A1 Allow answers between 3.8×10^6 and 3.814×10^6 inclusive oe
(d)	$2.5 \times 10^7 \times 1.024 \times 0.976$		2	M1
		2.49856×10^7 or 24 985 600		A1 Allow answers between 24 986 000 and 24 990 000 inclusive oe ISW rounding.
				<i>Total 8 marks</i>

Q14.

Question		Working	Answer	Mark
	(a)			3
	(b)	"14 + 8 + 9 + 7 + 13 + 15 + 3x + x" = 90 oe		2
			6	
	(c) (i)		22	1
	(ii)		84	1
	(iii)		8	1
	(d)		$\frac{20}{37}$	2

Question	Notes
(a)	B3 for all correct entries. B2 for 5, 6 or 7 correct entries. B1 for 3 or 4 correct entries. Allow $24 - x$ instead of $3x$ Allow a sum that gives the required number. eg $20 - 7$ for the 13 Allow 6 and 18 instead of x and $3x$ respectively.
(b)	M1ft For an equation equivalent to $4x + 66 = 90$ or $3x = 24 - x$ or for the sum of their 8 values from their Venn diagram = 90 Do not ft if one of the 8 values is blank. SC: Award M1 for an equation equivalent to $\frac{4}{3}x + 66 = 90$
	A1cao This is not implied by 6 on the diagram.
(c) (i)	B1ft "their 9" + "their 13" Condone n("their 22") Do not ft if either required area is blank. Ft their x in part (b) Allow in terms of x
(ii)	B1ft $90 -$ "their part(b)" or $90 -$ "their x from the diagram" or adding their values in the circles. Condone n("their 84") Do not ft if any of the required areas are blank. Ft their x in part (b) Allow in terms of x
(iii)	B1ft "their 8" Condone n("their 8") Do not ft if the required area is blank. Ft their x in part (b) Allow in terms of x
	SC: If the numbers are listed rather than added or written as a fraction eg $22/90$. Award B0 for the first fully correct list/fraction following through from their diagram. The following B marks can then be awarded for a correct list/fraction following through from their diagram.
(d)	B2 Allow awrt 0.54 B1 for $\frac{20}{m}$ where $m \geq 20$ or $\frac{n}{37}$ where $n \leq 37$. This should be their final answer and not be in part of a calculation. Ignore cancelling. SC: B1ft for $\frac{"20"}{m}$ with "their 20" ie "their 7" + "their 13" as long as neither blank where $m \geq 20$ Ignore cancelling.
	<i>Total 10 marks</i>

Q15.

Q	Working	Answer	Mark	Notes
(a)	$\cos \theta = \frac{17}{32.3}$ or $\cos \theta = \frac{34^2 + 32.3^2 - 32.3^2}{2 \times 34 \times 32.3}$ $(\theta = 58.24313614...)$ or $\sin\left(\frac{1}{2}\alpha\right) = \frac{17}{32.3}$ or $\cos \alpha = \frac{32.3^2 + 32.3^2 - 34^2}{2(32.3)(32.3)}$ $(\alpha = 63.51372772...)$		6	M1 where θ is one of the base angles of the isosceles triangles. Where α is the angle at the vertex of the isosceles triangles
	$AN^2 = 34^2 + 16.15^2 - 2 \times 34 \times 16.15 \times \cos 58.2^\circ$ or $AN^2 = 32.3^2 + 16.15^2 - 2 \times 32.3 \times 16.15 \times \cos 63.5^\circ$			M1 dep on previous M mark
	$AN = 29$			A1 (for reference: 28.96243256... if exact values) 28.817854... if using 63, 29.09921... if using 64, 28.958570... if using 63.5, 28.950296... if using 58.2, 28.894033... if using 58 so check carefully that value of AN is accurate with angle used
	$MN = 17$			B1 although exact allow awrt 17 e.g. may come from $MN^2 = 16.15^2 + 16.15^2 - 2 \times 16.15 \times 16.15 \times \cos(63.51...)$
	"29" + "17"			M1 dep on both previous M1 marks
		46		A1 (correct working only) awrt 46 (for reference: 45.96243256...)

(b)	$\frac{\sin(\angle BAN)}{16.15} = \frac{\sin 58.2^\circ}{28.9...}$ or $\cos(\angle BAN)$ $= \frac{34^2 + (28.9...)^2 - 16.15^2}{2(34)(28.9...)}$		2	M1 correct complete method to find angle BAN Allow this mark for those that consider $\frac{\sin(\angle BNA)}{34} = \frac{\sin 58.2^\circ}{28.9...}$ which leads to either $\angle BNA = 86.546... \text{ or } 93.453...$ and considers $\angle BAN = 180 - 58.2^\circ - \angle BNA$ (if using incorrect value then most likely to see the angle given as 35.21... which scores M1 only)
		28		A1 (correct working only) – must be using a correct AN and angles from part (a) – awrt 28. (For reference: 28.303196...)
Total 8 marks				