Edexcel Year 11 Paper 3F Nov 22 Calculator Mark Scheme

Question	Answer	Marks	Notes and guidance
1	0.8	1	
2	Ninety thousand	1	Accept 90 000
3	3.6	1	
4	Accept any common multiple of 12 and 15 e.g. 60, 120, 180 etc	2	Award 1 mark for listing at least 3 multiples of each number.
5a	84	1	
5b	2	1	
6a	88	2	Award 1 mark for fully correct method to find the value of x. e.g. $360 - (98 + 95 + 79)$
6b	Angles in a quadrilateral sum to 360°	1	Award 0 for an incomplete/incorrect reason. e.g. Angles in a quadrilateral
7	£1.20	2	Accept 120p Answer must include correct units Award 1 mark for fully correct method to find cost per kg. e.g. $72 \div 0.6$
8a	6.6	1	Accept answers in the range $6.5 \leq x \leq 6.7$
8b	c. 22.5	2	Accept answers in the range $22 \leq x \leq 23$ Award 1 mark for fully correct method to find the value of 50 lb in kilograms e.g. their value for 5 lb $\times$ 10

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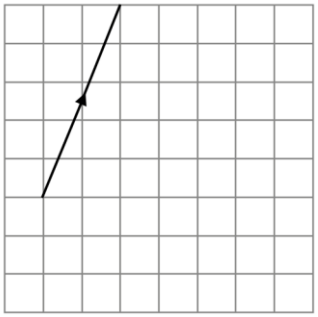
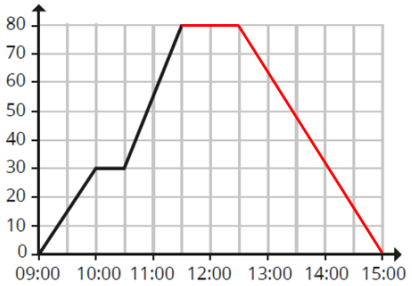
9a	$\begin{pmatrix}-6\\23\end{pmatrix}$	2	Award 1 mark for fully correct method to calculate $2a + b$. e.g. $\begin{pmatrix}2(-3)+0\\2(7)+9\end{pmatrix}$ or either term correct.
9b	Correct vector drawn anywhere on the grid. e.g. 	2	Award 1 mark for vector correct magnitude but with no/incorrect direction indicated.
10	0.104, 0.34, 0.4, 0.401, 0.44	2	Award 1 mark for at least 3 numbers correctly ordered.
11a	30 minutes oe	1	
11b	50	2	Award 1 mark for fully correct method to calculate the distance. e.g. 80 – 30
11c		2	Award 1 mark for each correct section.

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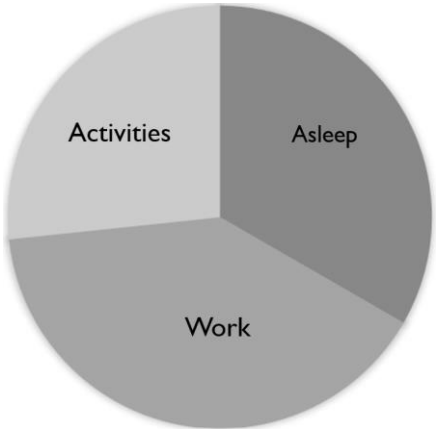
11d	32 kmh	2	Award 1 mark for fully correct method to calculate speed. e.g. 80 ÷ 2.5 Accept equivalent forms
12	Fully correct pie chart  	4	Accept angles drawn within 2° of exact values. Award 1 mark for correct method to find any angle. e.g. 8 ÷ 24 × 360 (= 120) Award 2nd mark for all angles correct. e.g. 120, 144 and 148 Award 3rd mark for attempt to draw at least one of their calculated angles onto the pie chart.
13	135	3	Award 1 mark for fully correct method to find the volume of the tank. e.g. 45 × 60 × 50 (= 135 000) Award 2nd mark for fully correct method to find amount in litres using their '135 000' e.g. '135 000' ÷ 1000
14a	3.828793103	2	Award 1 mark for correctly evaluating $6.12 + 3.07^2 = 15.449$
14b	3.83	1	Accept 'their' value for part a) correctly rounded to 2 decimal places.
15a	All three coordinates accurately plotted	1	

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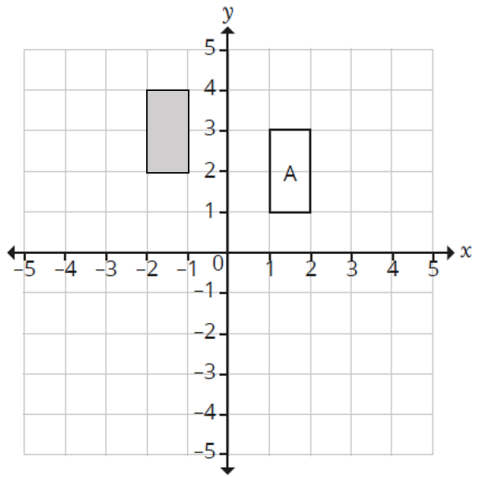
15b	$y = 2x + 4$	2	Award 1 mark for an equation in the form $y = 2x + c$ or $y = mx + 4$
16		2	Award 1 mark for image correctly translated in either the horizontal or vertical directions.
17	e.g.108 km/h $>$ 88 km/h	2	Accept a fully correct comparison in m/s or any other appropriate units. Award 1 mark for fully correct method to convert either cheetah's or springbok's speed to allow a comparison e.g. $30 \times 3600 \div 1000$ or $88 \div 3600 \times 1000$
18a	2016 and 2018	1	
18b	e.g. "The trend shows that the percentage of waste recycled by the council is increasing"	1	Accept any reason that indicates a positive trend
18c	e.g. "You don't know if it will carry on increasing or not"	1	Accept any reason that implies understanding of extrapolation

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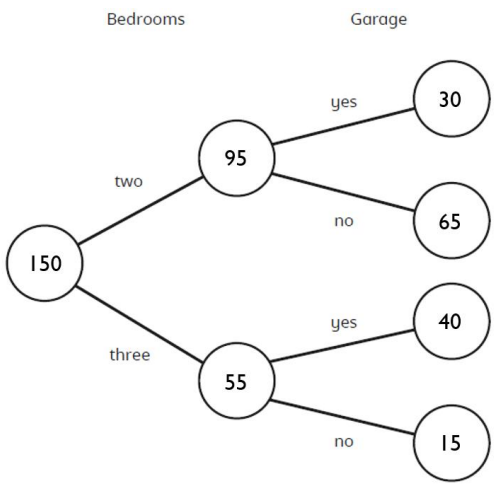
19a		4	Award 1 mark for correctly positioning the total number of houses built. Award 2nd mark for correctly completing the branches for number of bedrooms. Award 3rd and 4th marks for correctly completing the branches for garages.
19b	19 : 11	2	Award 1 mark for a correct ratio not simplified. e.g. 95 : 55
20a	1×10^{-3}	1	
20b	e.g. • The answer should be $\times 10^{11}$ • He should have added the powers of 10	1	Accept any correct reason. e.g. States the correct answer 6×10^{11} or states $10^5 \times 10^6 = 10^{11}$ oe
20c	6×10^4	2	Award 1 mark for correctly stating $\sqrt{4} \times 10^6 = 2\,000$
21	54	3	Award 1 mark for correct method to find the value of one ratio part. e.g. (180 – 90) ÷ 5 (= 18) Award 2nd mark for fully correct method to find ∠BAC using their 18. e.g. '18' × 3

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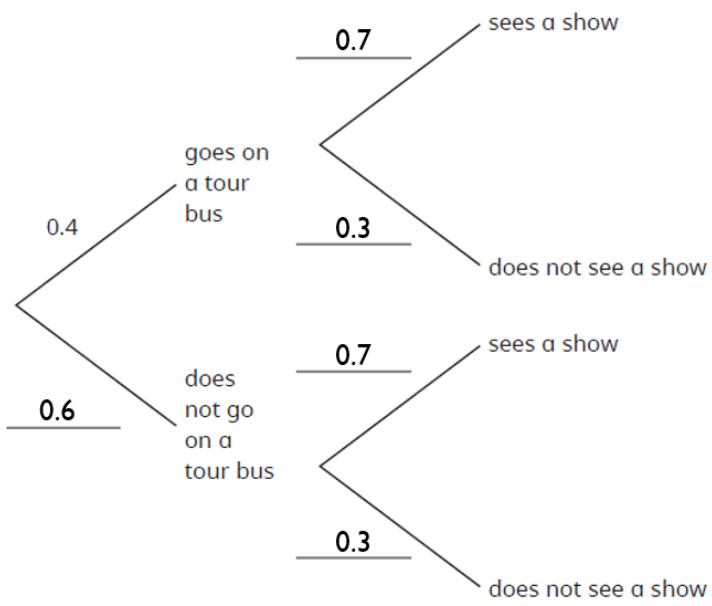
22		4	Award 1 mark for fully correct method to calculate P(does not go on a tour bus). e.g. 1 – 0.4 (= 0.6) Award 1 mark for fully correct method to calculate P(sees a show). e.g. 0.28 ÷ 0.4 (= 0.7) Award 1 mark for fully correct method to calculate P(does not see a show). e.g. 1 – their 0.7 (= 0.3)
23	$q = \sqrt{\frac{p+3}{2}}$	3	Award 1 mark for correct first step to make q the subject. e.g. $p + 3 = 2q^2$ or $\frac{p}{2} = q^2 - \frac{3}{2}$ Award 2nd mark for fully correct method to isolate q^2 e.g. $\frac{p+3}{2} = q^2$ or $\frac{p}{2} + \frac{3}{2} = q^2$

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24	80	3	Award 1 mark for calculating the sum of the two numbers. i.e. 96 Award 2nd mark for fully correct method to calculate the size of the larger number. e.g. $96 \div 6 \times 5$
25	24	3	Award 1 mark for correctly forming equation in terms of r. e.g. $3r^3 = 1536$ Award 2nd mark for correctly calculating $r = 8$
26a	e.g. $\angle ABE = \angle ACD$ and $\angle AEB = \angle ADC$ because corresponding angles are equal and $\angle CAD$ is common therefore ABE and ACD are triangles as all the angles are equal.	2	Accept any correct explanation that uses corresponding angles and common angles. Award 1 mark for correctly identifying any pair of equal angles.
26b	1.5	2	Award 1 mark for any correct method to find DE. e.g. $6 \div (8 \div 2)$ or $2 \div \frac{8}{6}$
26c	6.25	2	Award 1 mark for any correct method to find CD. e.g. $\frac{10}{8} \times 5$