Collins

Edexcel

GCSE

Mathematics

F

SET A – Foundation Tier

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Answers

Key to abbreviations used within the answers

M method mark (e.g. M1 means 1 mark for method)

A accuracy mark (e.g. A1 means 1 mark for accuracy)

B independent marks that do not require method to be shown (e.g. B2 means 2 independent marks)

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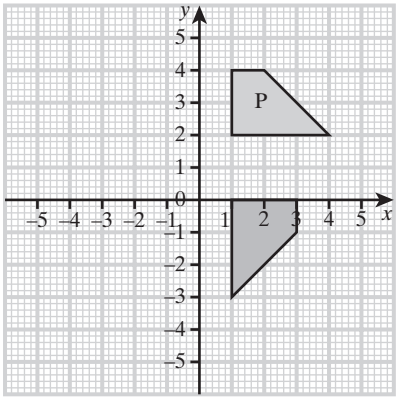
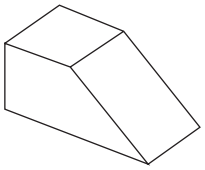
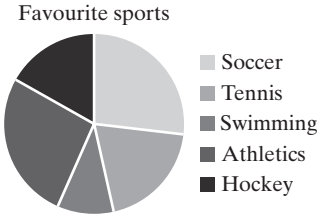
Paper 1

Question	Answer	Mark
1	9×8 $= 72$	M1 A1
2	2, 3, 5, 7, 11	B2
3	$\frac{1}{9}, \frac{1}{6}, \frac{1}{3}, \frac{4}{9}$	B2
4	$\frac{32}{100}$ $= \frac{8}{25}$	M1 A1
5	Use of valid short division method $= 0.875$	M1 A1
6	 Shape rotated by 90° clockwise In correct place	M1 A1
7	$\frac{5}{3} \times \frac{9}{2}$ $= \frac{45}{6} \left(= \frac{15}{2} \right)$ or $7\frac{1}{2}$	M1 A1 A1
8	$r = 6$ $\frac{\pi r^2}{2}$ $= \frac{\pi \times 6^2}{2}$ $= 18\pi \text{ cm}^2$	B1 M1 A1
9	$75 \div 6 = 12.5$ So, Gavin needs 13 packs of buns	M1 A1 A1
10	$\frac{12}{100} \times 75$ or 0.12×75 $= \frac{3}{25} \times 75$ $= 9$	M1 A1 A1
11	$15 = 3 \times 5$ $20 = 2 \times 2 \times 5$ LCM is $2 \times 2 \times 3 \times 5 = 60$	M1 M1 A1

Question	Answer	Mark
12	$3(x-1) = 6(10-x)$ $3x - 3 = 60 - 6x$ $9x = 63$ $x = 7$	M1 A1 A1 A1 A1
13 (a)		B1
(b)	$\frac{1}{2} \times (6+2) \times 2 \times 2 = 16 \text{ cm}^3$	M1 A1
14	$1 - \left(\frac{2}{5} + \frac{3}{10} \right)$ $1 - \left(\frac{4}{10} + \frac{3}{10} \right)$ $= 1 - \frac{7}{10}$ $= \frac{3}{10}$	M1 A1 A1
15	$a = 65^\circ$ $b = 135^\circ$ $c = 45^\circ$	B1 B1 B1
16 (a)	 Correct angles: $96^\circ, 72^\circ, 36^\circ, 96^\circ, 60^\circ$ Pie-chart drawn Key	M1 A1 A1 B1
(b)	$\frac{12+6}{60}$ $= \frac{18}{60} \left(= \frac{3}{10} \right)$	M1 A1
17	$2 \times 2 \times 2$ $= 8$	M1 A1
18	Valid method of long multiplication $= 15.198$	M1 A1
19	Use of $\sin 30^\circ = \frac{1}{2}$ $\sin 30^\circ = \frac{x}{40}$ $x = 40 \sin 30^\circ$ $= 20$ cm	B1 M1 A1 A1

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Question	Answer	Mark
20	$\text{time} = \frac{\text{distance}}{\text{speed}}$ $= \frac{200}{80}$ $= 2\frac{1}{2}$ = 2 hours 30 minutes	M1 A1 A1
21	A: 1 B: 3 C: 2 D: 4	B1 B1 B1 B1
22	$\frac{2}{7}$ of time spent on homework $\frac{2}{7} \times \frac{2}{3} \times 7$ $= \frac{4}{21} \times 7$ $= \frac{4}{3}$ = 1 hour 20 minutes	B1 M1 A1 A1
23	95% of $x = 76$ $\frac{19x}{20} = 76$ $x = \frac{76 \times 20}{19}$ $= 4 \times 20$ = £80	 M1 A1 M1 A1
24	$\frac{16}{3} \div \frac{2}{9}$ $= \frac{16}{3} \times \frac{9}{2}$ $= \frac{72}{3}$ = 24	M1 M1 A1 A1
25 (a)	3.3×10^4	B1
(b)	8.2×10^{-3}	B1
(c)	2×10^{-7}	B1
26	$(2x-1)^2 = (2x-1)(2x-1)$ $= 4x^2 - 2x - 2x + 1$ $= 4x^2 - 4x + 1$	M1 A1 A1

Paper 2

Question	Answer	Mark
1	Seven thousandths	B1
2	125	B1
3	10.57	B1
4 (a)	Ordering numbers: 3, 5, 10, 12, 50 Median is 10	M1 A1
(b)	9	B1
5	$-2x = 8$ $x = -4$	M1 A1
6	$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$ $80 = 2 \times 2 \times 2 \times 2 \times 5$ HCF is $2 \times 2 \times 2 \times 2 = 16$	M1 A1
7	$65p + 300q$	B1 B1
8	$a(20-r) = 5$ $20a - ar = 5$ or $20 - r = \frac{5}{a}$ $20a - 5 = ar$ $r = \frac{20a-5}{a}$ or $r = 20 - \frac{5}{a}$	M1 A1 A1 A1
9 (a)	$510 \leqslant x < 520$ cm	B1
(b)	$\sum \frac{fx}{f} = \frac{(505 \times 2 + 515 \times 6 + 525 \times 1 + 535 \times 4 + 545 \times 3)}{16}$ $= \frac{8400}{16} = 525$ cm	M1 A1
10	2 + any other prime e.g. 2 + 3 = 5, so odd	M1 A1
11	Attempt to use Pythagoras $x^2 + 12^2 = 29^2$ $x = \sqrt{29^2 - 12^2}$ $x = 26.40$ cm	M1 A1 A1
12	$2\begin{pmatrix}3\\-2\end{pmatrix} - 3\begin{pmatrix}-2\\-1\end{pmatrix} = \begin{pmatrix}6\\-4\end{pmatrix} + \begin{pmatrix}6\\3\end{pmatrix}$ $= \begin{pmatrix}12\\-1\end{pmatrix}$	M1 A1

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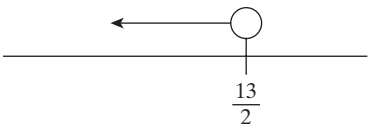
Question	Answer	Mark
13 (a)	10.5 pictograms One pictogram represents $\frac{210}{10.5} = 20$ families	B1 M1 A1
(b)	$3.5 \times 20 = 70$ families	A1
14	$36 \div 3 = 12$ $= 12 \times 7$ $= £84$	M1 A1
15 (a)	13	B1
(b)	16	B1
(c)	$3n + 1$	M1 A1
16	$\frac{2x+7}{4} < 5$ $2x + 7 < 20$ $2x < 13$ Solution is $x < \frac{13}{2}$ or $x < 6.5$  	M1 A1 B1
17	Any suitable method, e.g.: First box: 1g costs 0.53p Second box: 1g costs 0.52p Third box: 1g costs 0.51p So, the third box is best value for money	M1 A1 A1
18	$1000 \times 1.02 \times 1.0125^4$ $= £1072$	M1 A1 A1
19	Any two valid reasons, e.g.: The sample size may be too small to extrapolate The sample chosen may have been biased (age/gender), or otherwise not representative of the school	B1 B1
20	37 60	B1 B1
21	Bisect angle ABC with construction lines Bisect angle just constructed (with construction lines)	B1 B1
22 (a)	$x = 130°$ Since vertically opposite angles are equal	B1 B1

Question	Answer	Mark
(b)	Interior angles in a pentagon add to 540° $540° - 130° = 410°$ $y = \frac{410°}{4} = 102.5°$	B1 M1 A1
(c)	$z = 50°$ Since 130° and z are supplementary (or angles on straight line sum to 180°)	B1 B1
23	$(x-7)(x+4)$	M1 A1
24 (a)	$m = \frac{2}{4} = \frac{1}{2}$ $c = -2$ $y = \frac{1}{2}x - 2$	B1 B1 B1
(b)	Gradient of new line is $\frac{1}{2}$ Equation is $y = \frac{1}{2}x + c$ So $y = \frac{1}{2}x + 1$	B1 M1 A1
25	$16 : 25 = 1 : n$ $16n = 25$ $n = 1.5625$	M1 A1 A1
26 (a)	Circumference $= 2\pi r = 2 \times \pi \times 7.5 = 47.12$ cm So length of paper is '47.12' + 2 = 49.12 cm Area $= 49.12 \times 11 = 540$ cm^2	 M1 A1 M1 A1
(b)	Volume $= \pi r^2 h = \pi \times 7.5^2 \times 11$ $= 1940$ cm^3	M1 A1
27	$y - 2 = 4x - y$ $2x + 1 = 14 - y$ Valid attempt to solve simultaneously $x = 3$ $y = 7$	M1 M1 M1 A1 A1

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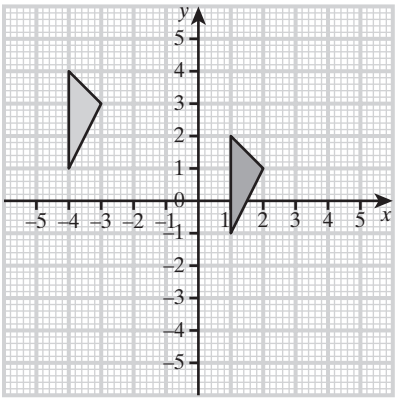
Paper 3

Question	Answer	Mark
1	32 000	B1
2	Square number is 49 Prime number is 47	B1 B1
3	$84.65 \text{ km} = 84.65 \times 1000 = 8\,465\,000 \text{ cm}$ $\frac{8\,465\,000}{625\,000} = 13.5 \text{ cm}$	M1 M1 A1
4 (a)	$\frac{18+12}{18+14+8+15+12+6+8+8+4} \times 100$ $= \frac{30}{93} \times 100$ $= 32.3\%$	M1 A1
(b)	Mathematics	B1
5 (a)	$\frac{300}{17} = 17.6\ldots$ So he needs to attend 18 matches	M1 A1
(b)	$21 \times 17 - 300$ $= £57$	M1 A1
6 (a)	Positive correlation (or no. of ice creams increases as temperature increases)	B1
(b)	Line of best fit Approximately 15-20 ice creams	B1 B1
(c)	One good reason e.g.: relationship may not be linear / if temp. is low enough, predicted no. of ice-creams sold becomes negative	B1
7 (a)	$x = 180^\circ - 40^\circ - 56^\circ = 84^\circ$	M1 A1
(b)	No, they are not congruent since side AC does not correspond to side QR (ASA rule)	B1 B1
8 (a)	48	B1
(b)	$\frac{x-3}{2} = 2x$ Solve to give $x = -1$	M1 A1
9	$-7, -6, -5, -4, -3, -2, -1, 0, 1, 2$	B1

Question	Answer	Mark
10	 Shape translated Correct position	B1 B1
11 (a)	$9x - 2y$	B1
(b)	$9x^2$	B1
12	$15 \times \frac{60^2}{1000}$ $= 54$ km/hr	M1 A1
13	$\tan 35^\circ = \frac{12}{x}$ $x = \frac{12}{\tan 35^\circ} = 17.1$ cm	M1 A1
14 (a)	Equation – only valid for certain values of x	B1
(b)	Equation – only valid for certain values of x	B1
(c)	Identity – true for all values of x	B1
15	Use $A = \frac{\theta}{360} \times \pi r^2$ $\theta = \frac{250 \times 360}{\pi \times 15^2}$ $= 127^\circ$	M1 A1
16	$19.3 \text{ g/cm}^3 = (19.3/1000) / (1/1\,000\,000) = 19\,300 \text{ kg/m}^3$ Mass = density × volume $= 0.1 \times 19\,300 = 1930$ kg	B1 M1 A1
17	Use of right angled triangle, base = 5 cm $\cos x = \frac{5}{7}$ $x = \cos^{-1}\left(\frac{5}{7}\right) = 44.4$	M1 M1 A1

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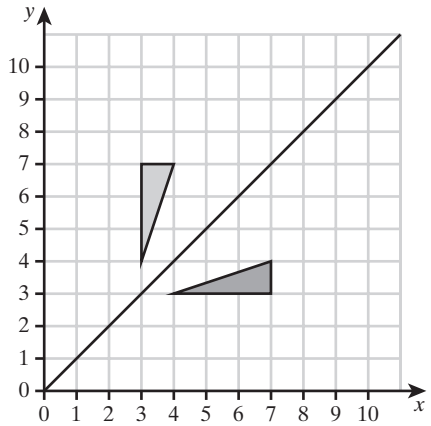
Question	Answer	Mark
18	Valid attempt to expand brackets (at least one bracket expanded correctly) $10x - 20 - 2x + 20$ $= 8x$	M1 A1 A1
19 (a)	Paper 1: 0.7, 0.3 Paper 2: 0.8, 0.2, 0.8, 0.2	B1 B1
(b)	$1-(0.3\times0.2)=0.94$ (or $0.8\times0.7+0.8\times0.3+0.2\times0.7$)	M1 A1
20	$\frac{1}{f}=\frac{1}{3.5}+\frac{1}{12.2}=0.368$ $f=2.72$	M1 A1
21	$3a+2b=76$ $a+b=32$ Solve simultaneously (eliminate either a or b) a = 12p b = 20p	M1 M1 A1 A1
22 (a)	0.6 × 0.6 = 0.36	M1 A1
(b)	0.4	B1
(c)	60 × 0.6 = 36	M1 A1
23 (a)	 Triangle plotted correctly	B1
(b)	$y = x$ correctly drawn	B1
(c)	Reflection of 'their' triangle in $y = x$	B1
24	Evidence of using 0.84 as a multiplier $10\,000\times0.84^4$ = £4979 So, 4 years	M1 A1 A1
25	$\frac{(x+3)(x-1)}{(x+3)(x-3)}$ $=\frac{x-1}{x-3}$	M1 A1 A1 A1

Question	Answer	Mark
26	Equation of L is $y=\frac{4}{5}x+2$ Attempt to solve $0=\frac{4}{5}x+2$ to give coordinate $\left(-\frac{5}{2},0\right)$	B1 M1 A1
27	Perimeter of shape 1 is $\frac{3}{4}\times2\pi r+10$ $=\frac{15\pi}{2}+10$ Perimeter of shape 2 is $2\pi r$ $\Rightarrow 2\pi r=\frac{15\pi}{2}+10$ Setting terms equal and attempting to solve $\Rightarrow r=\frac{\frac{15\pi}{2}+10}{2\pi}=5.34$ cm	M1 A1 M1 M1 A1

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