National Qualifications

X847/75/01

Mathematics
Paper 1 (Non-calculator)

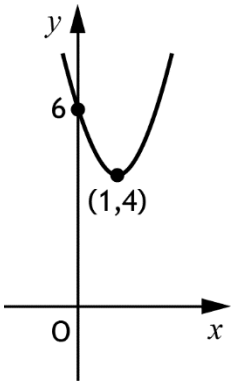
Marking Instructions

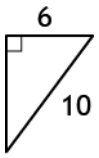
Please note that these marking instructions have not been standardised based on candidate responses. You may therefore need to agree within your centre how to consistently mark an item if a candidate response is not covered by the marking instructions.

Marking instructions for each question

Question	Generic scheme	Illustrative scheme	Max mark
1.	•1 start process •2 solution	•1 $1^2+(-4)^2+8^2$ •2 9	**2**
2.	•1 correct common denominator •2 answer	•1 $5\frac{\cdots}{14}-1\frac{\cdots}{14}$ or $\frac{\cdots}{14}-\frac{\cdots}{14}$ •2 $4\frac{3}{14}$ or $\frac{59}{14}$	**2**
3.	•1 start expansion •2 complete expansion •3 collect like terms which must include a term in x^2	•1 $6x^2+18x-5x-15$ or $8x-2x^2$ •2 $6x^2+18x-5x-15+8x-2x^2$ •3 $4x^2+21x-15$	**3**
4.	•1 calculate angle POM •2 calculate angle ONM	•1 76 •2 38	**2**
5.	•1 find quartiles •2 calculate semi-interquartile range	•1 13, 23·5 •2 5·25	**2**
6.	•1 correct substitution into $y=kx^2$ •2 solve	•1 $-12=k\times 2^2$ •2 -3	**2**
7.	•1 correct scaling •2 consistent value for c or d •3 consistent values for c and d	•1 for example $\begin{matrix}15c+6d=12\\8c-6d=34\end{matrix}$ •2 $c=2$ or $d=-3$ •3 $c=2$ and $d=-3$	**3**
8.	•1 calculate discriminant •2 state nature of roots	•1 44 •2 two real and distinct roots	**2**

Question			Generic scheme	Illustrative scheme	Max mark
9.			•1 simplify $\sqrt{50}$ •2 simplify $\sqrt{45}$ •3 express in simplest form	•1 $5\sqrt{2}$ •2 $3\sqrt{5}$ •3 $4\sqrt{2}+3\sqrt{5}$	**3**
10.	(a)		**Method 1:** $y-b=m(x-a)$ •1 find gradient •2 substitute gradient and a point into $y-b=m(x-a)$ •3 state equation in simplest form in terms of W and S **Method 2:** $y=mx+c$ •1 find gradient •2 substitute gradient and a point into $y=mx+c$ •3 state equation in simplest form in terms of W and S	•1 $\frac{60}{1200}$ •2 for example $y-450=\frac{60}{1200}(x-6000)$ •3 $W=\frac{1}{20}S+150$ or equivalent •1 $\frac{60}{1200}$ •2 for example $450=\frac{60}{1200}\times 6000+c$ •3 $W=\frac{1}{20}S+150$ or equivalent	**3**
	(b)		•4 calculate wage	•4 200	**1**
11.			•1 expand brackets •2 rearrange •3 solve for x	•1 $1-x-4>2x$ •2 $-3x>3$ or $-3>3x$ •3 $x<-1$ or $-1>x$	**3**
12.			•1 evidence of $75\%=2400$ •2 begin valid strategy •3 complete calculation within a valid strategy	•1 $75\%=2400$ •2 $(25\%=)\frac{2400}{3}$ or $(1\%=)\frac{2400}{75}$ •3 3200	**3**

Question			Generic scheme	Illustrative scheme	Max mark
13.			•1 state value of a •2 state value of b	•1 $a=2$ •2 $b=3$	**2**
14.	(a)		•1 state coordinates of B	•1 $(3,0,-3)$	**1**
	(b)		•2 correct substitution into volume of hemisphere formula •3 calculate volume in terms of π	•2 $\frac{1}{2}\times\frac{4}{3}\times\pi\times3^3$ •3 18π	**2**
15.			•1 interpret index •2 complete evaluation	•1 $\sqrt{16^3}$ •2 64	**2**
16.			•1 correct substitution •2 evaluate $f(90)$	•1 $4\sin(3\times90)$ •2 -4	**2**
17.			•1 coordinates of turning point correct •2 sketch parabola with minimum turning point consistent with •1 •3 y-intercept correct	•1 $(1,4)$ •2 parabola with minimum turning point consistent with •1 •3 $(0,6)$ or 6 	**3**

Question			Generic scheme	Illustrative scheme	Max mark
18.			•[1] marshal facts and recognise right angled triangle	•[1] 	**4**
			•[2] consistent Pythagoras statement	•[2] $10^2 - 6^2$	
			•[3] calculate third side	•[3] 8	
			•[4] calculate length	•[4] 48	
19.			•[1] start to factorise	•[1] $(2x \;\; 5)(3x \;\; 1)$	**3**
			•[2] complete factorisation	•[2] $(2x+5)(3x-1)$	
			•[3] solve equation	•[3] $-\frac{5}{2}$, $\frac{1}{3}$	

[END OF MARKING INSTRUCTIONS]