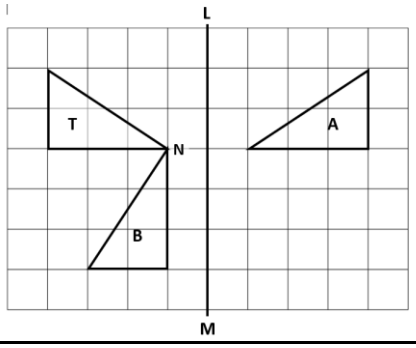
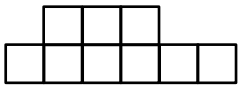
MATHEMATICS - MARKING SCHEME

(Total 100 marks)

Question and Working			Mark	Total	Guidance
1	(a)	Any correct odd square number e.g. 1, 9, 25, 49, 81 …	1		
	(b)	Any two from 11, 13, 17, 19	1		
	(c)	7 + 24 = 31	1	**3**	
2	(a)	$\frac{32}{100} = \frac{8}{25}$	2		Award 1 mark if fraction is not simplified or partially simplified.
	(b)	72 m	1		
	(c)	$\frac{3^2}{3^6} = \frac{1}{81}$	2	**5**	Award 1 mark if 3^2 is seen in numerator
3	(a)	60°	1		
	(b)	180°	1		
	(c)	90°	1		
	(d)	360°	1		
	(e)	72°	1		
	(f)	045°	1	**6**	45° not accepted
4	(a)		1		Correct shape and orientation
			1		Correct Position
	(b)		1		Correct shape and orientation
			1	**4**	Correct Position

5	(a)		2		1 mark for every 5 correct entries.
		(b) $\frac{1}{2}$ o.e.	1		
		(c) $\frac{5}{16}$ o.e.	1	**4**	
6	(a)	4:5	1		
	(b)	520 g	1		
	(c)	8 × 4 × 1.50 = €48			
		48 − 19.22	1		
		= €28.78	1	**4**	
7	(a)	24 000 × 1.18	1		
		€28 320	1		
	(b)	28 320 − 12 000 = €16 320	1		
		16 320 ÷ 20	1		
		= €816	1	**5**	
8	(a)	$A = \frac{h(a+b)}{2} = \frac{3.6(2.5+2)}{2}$	1		
		= 8.1 m^2	1		
	(b)	L = V ÷ Cross-sectional Area			
		= 40.5 ÷ 8.1	1		
		= 5 m	1		
	(c)	2.5 − 2 = 0.5 m	1		
		AD^2 = 3.6^2 + 0.5^2 = 13.21	1		
		AD = 3.63 m	1	**7**	Accept 3.6 or more accurate.
9	(a)	PA = 5 cm	1		Correct length only
		Correct position of point A on scale drawing.	1		
		PB = 7.5 cm	1		Correct length only
		Correct position of point B on scale drawing	1		
	(b)	9 × 10 = 90 m	2		±1 m
	(c)	$\tan P\hat{B}A = \frac{50}{75} = 0.666\ldots$	1		
		$P\hat{B}A = \tan^{-1} 0.666\ldots = 33.7°$	2	**9**	

10	(a)	-5	1		
	(b)	$\frac{3x+9-x+3}{6}$			
		$\frac{2x+12}{6}$	1		For correct expansion & collecting like terms
		$\frac{2(x+6)}{6}$	1		For factorisation
		$\frac{x+6}{3}$	1		
	(c)	$x+2x-40+3x+x-20=360$	1		For forming equation and simplifying
		$7x-60=360$			
		$7x=420$	1		
		$x=60°$	1		
	(d)	$1-3(-2)=7$ cm	1		
		$\mathrm{P}=7\times 4=28$ cm	1		
	(e)	$2a=b+4$	1		
		$b=2a-4$	1	**11**	
11	(a)	∠SRT = ∠QRP (Vert. Opp. ∠s) ∠TSR = ∠PQR (Alternate ∠s) ∠STR = ∠QPR (Alternate ∠s)	1		Any two correct statements including reasons.
		Triangles STR and QPR are similar (by the AA theorem)	1		or AAA
	(b)	ST=6.2×105.9=10.5 cm	2	**5**	
12	(a)	Median = $\frac{96.2+96.8}{2}$ = 96.5 g	2		
	(b)	Mean = $\frac{776}{8}$ = 97 g	2		
	(c)	Range = 108 – 89.4 = 18.6 g	2	**6**	
13	(a)	25%	1		
	(b)	2000 (Portugal) → 60° Sicily = 2000 × 3 = 6000 Spain = 2000 ÷ 2 = 1000 Crete = 2000 + 1000 = 3000	1 1 1 1	**5**	

14	(a)	$3t + 2c = 1900$ $2t + 4c = 1800$	1		Both correct
	(b)	$6t + 4c = 3800$ $\underline{2t + 4c = 1800}$	1		Multiplying
		$4t = 2000$	1		Subtracting
		$t = 500$	1		
		$1500 + 2c = 1900$	1		Substitution
		$2c = 400$ $c = 200$	1	**6**	
15	(a)		1		
	(b)	Design: 1 2 3 4 5 ... 10 Number of squares: 3 5 7 **9** **11** ... **21**	1 1		1mark for 9 and 11 1 mark for 21
	(c)	$2n + 1$	2	**5**	1 mark for attempt to find $2n$
16	(a)	Line drawn through P and Q	1		
	(b)	i) 1 ii) 1	2		
	(c)	x: -2 -1 0 1 2 3 4 x^2: 4 1 0 1 4 9 16 $-2x$: 4 2 0 -2 -4 -6 -8 -3: -3 -3 -3 -3 -3 -3 -3 y: 5 0 -3 -4 -3 0 5	3		
	(d)	Correct plotting of points Correct drawing of parabola	1 1		
	(e)	-1 ; 4	1	**9**	
17	(a)	42°	1		Award 1 for correct working instead of reason: $180 - 102 = 78°$ $180 - 78 - 60 = 42°$ or $102 - 60 = 42°$
		Angles on a straight line and/or Sum of angles in a triangle (=180°) or Exterior angle property (of a triangle)	1		
	(b)	84°	1		Award 1 for correct working instead of reason: $42 \times 2 = 84°$
		Angle at the centre (is equal to twice the angle on the circumference)	1		
	(c)	48°	1		Award 1 for correct working instead of reason: $\frac{180 - 84}{2} = 48°$
		(Base angles of an) Isosceles triangle.	1	**6**	