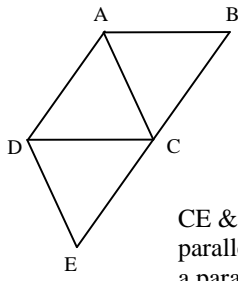


MARKING SCHEME – PAPER I [CORE] MAY 2006 SESSION			
Question Number	Answer	Mark	Notes
1(a)	$394 - 299 = 95;$ 95×360 $= 34,200$	M1 A1	For (difference) $\times 360$
(b)(i)	$\text{Lm}200 \times 2.27 = \text{€}454$	B1	Accept 454
(ii)	$52 \div 2.27$ $= \text{Lm}22.907 = \text{Lm}22.91$	M1 A1	For dividing 52 by 2.27 Accept 22.91 <i>only</i>
Total: 5 marks			
2(a)	Colour: paint = 6 : 100 $\frac{6}{100} : 1; 5 \times \frac{6}{100} = 0.3$ litres	M1 A1	Using $\frac{6}{100} \times 5$ Accept 0.3 [no units] or 300ml or 300cm ³ [with units]
(b)	$576 \div 48$ $= 12$ cm	M1 A1	
Total: 4 marks			
3(i)	$v = \frac{s}{t}$ $t = \frac{s}{v}$ $t = 8.19 \times 10^{13} \div 3 \times 10^5 = 273\,000\,000$ $= 2.7 \times 10^8$ s	M1 M1 A1 M1	Correct relationship/Prop. statement Making t subject/Dividing & subst. For answer not in standard form Changing to standard form to 2 s.f.
(ii)	2.73×10^8 s $\div 60 \div 60 \div 24 \div 365$ or 366 $= 8.66$ or $8.63 \approx 9$ years	M1 M1 M1	For any one conversion For a second conversion For 3 rd and 4 th conversions
Total: 7 marks			

4(i)(a)	Total number of coins = $x + y$; $x + y = 13$	M1 A1	For $x + y$
(b)	$10x + 5y = 105$	M1 M1 A1	For $10x$ or $5y$ For $10x + 5y$ $10x + 5y = 105$
(ii)	$x + y = 13 \dots$ [i] [i] $\times 5$: $5x + 5y = 65 \dots$ [ii] and $10x + 5y = 105 \dots$ [iii] [iii] – [ii]: $5x = 40$ $x = 8$ in [i]: $y = 13 - 8 = 5$	M1 A1 A1	Eliminate any one unknown For x (or y) For y (or x)
Total: 8 marks			

5(i)	[Refer to Diagram]	M1 M1 A1 A1	Construction of 60° angle Construction of 90° angle Accuracy of construction – Δ shape Correct labeling of points A, B and C
(ii)		M1 A1ft	Correct bisection of angle A (relative to diagram) Point D labeled correctly [has to intersect BC]
(iii)	$6.6\text{cm} \leq CD \leq 7.2\text{cm}$	A1	Award only if diagram makes sense [award only if bisection is done using compass]
Total: 7 marks			

6(a)	$P = a + 2a + b + b$; $P = 3a + 2b$	M1 A1	Adding the four sides Accept $3a + 2b$
(b)	$7(y + 3) = 3(y + 7)$ $7y + 21 = 3y + 21$ $4y = 0$; $y = 0 \div 4$ $y = 0$	M1 M1 M1 A1	Expanding both brackets Collecting like terms Dividing by the coefficient of y
(c)(i)	$f(4) = \frac{6}{1-4} = \frac{6}{-3} = -2$	B1	Award only if -2 is the last term written
(ii)	$3 = \frac{6}{1-x}$ $3(1 - x) = 6$ $3 - 3x = 6$ $3x = 3 - 6 = -3$ $x = -1$	M1 M1 A1	For expression Expression with no denominator and with expanded brackets
Total: 10 marks			

7(i)	 <p>AD = CE (since BC = AD)</p> <p>CE // AD (since CB // AD)</p> <p>CE & AD are equal and parallel, hence ACED is a parallelogram</p>	M1	Reason <i>must</i> be given
		M1	Reason <i>must</i> be given
		M1	The defining characteristics of this parallelogram <i>must</i> be given. [accept “Therefore it is a parallelogram”]
(ii)	$\hat{A}CD = 40^\circ$ (alternate angles) $\hat{C}DE = 40^\circ$ (alternate angles)	M1 A1	At least <i>one</i> reason given Award this mark only if no reasons or wrong reasons given
(iii)	$\hat{A}DE = 180 - 25 = 155^\circ$ (interior angles) $\hat{A}DC = 155 - \hat{C}DE$ $= 155 - 40 = 115^\circ$	M1 M1 A1ft	One reason <i>must</i> be given [ft for incorrect $\hat{C}DE$ in (ii)]
Total: 8 marks			

8(i)	<p>In $\triangle ABC$: $\tan 30 = \frac{80}{BC}$</p> $BC = \frac{80}{\tan 30}$ $BC = 138.564 = 138.56\text{m (2d.p.)}$	M1 M1	For substitution in tangent ratio For BC subject of formula in correct ratio
		A1	
		M1 M1	For substitution in tangent ratio and AD subject of formula [ft for incorrect BC in (i)]
(ii)	<p>In $\triangle AED$: $DE = BC$</p> $\tan 40 = \frac{AD}{138.564}; AD = 138.564 \times \tan 40$ $AD = 116.269 = 116.27\text{m (2 d.p.)}$ <p>$BD = AD - 80$ $= 36.269 = 36.27\text{m}$</p>	A1ft M1	[award only if $AD > 80$]
(iii)	<p>In $\triangle BDE$: $\tan \alpha = \frac{BD}{DE}$</p> $\tan \alpha = \frac{36.269}{138.564}$ $\alpha = 14.668^\circ = 14.67^\circ \text{ (2 d.p.)}$	M1 M1 A1ft	[ft for incorrect BD and/or DE]
Total: 10 marks			

9(i)	$\frac{1}{2}(4x)y = 24$ $2xy = 24$ or $4xy = 48$ $xy = 12$	M1 M1	Accept verification method
(ii)(a)	area $\Delta PBC = \frac{1}{2}(4x)(y+8)$ $= 2x(y+8) = 2xy + 16x$ $= 2(12) + 16x$ $= (24 + 16x) \text{ m}^2$	M1 M1 A1	Award also if $y+8$ has no brackets but continues correctly to $2xy + 16x$ For substituting to eliminate y Or equivalent [e.g. $2x(\frac{12}{x} + 8)$]
(b)	area $\Delta ABP = \text{area } \Delta PBC - \text{area } \Delta ABC$ $= (24 + 16x) - 24$ $= 16x \text{ m}^2$	M1 A1ft	Award even if area is not in terms of x Award only if in terms of x [ft for incorrect (ii)]
(iii)	$16x = 32$ $x = 2$ $y = \frac{12}{x} = 6$	M1 M1 A1ft	Ans. in (b), in terms of x and/or $y = 32$ Substituting value of x in $xy = 12$ [ft for incorrect (b); ft only for positive answers]
Total: 10 marks			

10(i)	A = 2; B = 5; C = 3 [Accept tally method presentation as long as values are implied in part (ii)]	B1 B1	For any <i>one</i> correct value For <i>other two</i> correct values
(ii)	A: $2 \div 10 \times 360 = 72^\circ$ B: $5 \div 10 \times 360 = 180^\circ$ C: $3 \div 10 \times 360 = 108^\circ$ [refer to pie chart]	M1 M1 M1 M1 A1	Angles in pie chart are drawn accurately and add up to 360° Labeling of sectors – angles not required [Award only if all sectors are drawn accurately]
(iii)	Average males = $(40 + 34 + 41 + 30 + 45) \div 5 = 190 \div 5 = 38$ Average females = $(38 + 23 + 47 + 36 + 36) \div 5 = 180 \div 5 = 36$ Males: Females = 38 : 36 (or 19 : 18)	M1 A1 A1 A1	For average males (or females) as sum $\div 5$ Correct average (male or female) Other average
Total: 11 marks			