Edex spec HP2

FPP → Condensed Solutions

H

(1)

$w = 3t + 11$

$w - 11 = 3t$ (1)

$\frac{w-11}{3} = t$ (1)

(2)

LONDON	PARIS		NY	
£1480	£	€	£	\$
	1	1.34	~~1~~	~~2250~~
	$\boxed{1478}$	1980	1	1.52
			$\boxed{1480}$	2250

$\div 1.34$ (1)

$\div 1.52$ (1)

Sardins de Paris is cheapest. (1)

(3)

Jan	110 (1)
Feb	84
Mar	78
Apr	94
May	90
June	120
Total	576

Mean Sales = $576 \div 6 = \underline{\underline{96}}$ (1)

Yes they met their target. (1)

You need to find the sales for each month from the graph.

(4)

a/ $160 < h \leq 170$ (1)

b/ i/ The last data point should not be joined ~~to~~ the first. (1)

ii/ Points should be plotted in the middle of the relevant class interval, (1) (not at the beginning as in this example).

5. See end

6. $7500 \times 1.04^2 = \underline{\underline{£8112}}$ 1 1

7.

Becky	x 1	10 marbles.
Chris	$2x$	20
Dan	$2x+7$	27

$5x + 7 = 57$

$5x = 50$

$x = 10$ 1

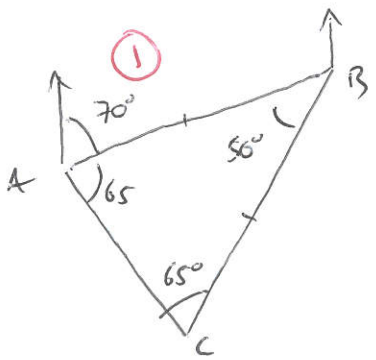
Dan is wrong because 57 marbles shared 3 ways is 19 each. Chris has more than that so he will need to give up a marble as well as Dan. 1

8. Area rectangle $= 16 \times 19 = 304$ 1

Area semicircle $= \dfrac{\pi \times 8^2}{2} = 32\pi$

Area shaded $= 304 - 32\pi$ 1

% shaded $= \dfrac{304 - 32\pi}{304} = \underline{66.9\%}$ 1 1

9. 

$\dfrac{180 - 50}{2} = 65°$ 1

$70 + 65 = \underline{\underline{135°}}$ 1

Read the information in the question and add it to the diagram.

FPP → Condensed Solutions (H)

(10) a/ gradient $= \frac{-210}{140} = \underline{\underline{-1.5}}$ (1) (1)

Notice that the y axis is going up in sixes!

b/ The depth of the water decreases by 1.5cm every second. (1)

(11) a/ $0.7 \times 0.7 = 0.49$ (1) (1)

b/ $1 - 0.49 = 0.51$ (1) (1)

b/ You could do it as
0.7×0.3
$+$
0.3×0.7
$+$
0.3×0.3

(12) a/ $\frac{1}{2.5} = \frac{2}{5} = 0.4$ (1)

b/ $\sqrt[3]{\frac{4.3 \times \tan 39}{23.4 - 6.06}} = 0.58559 = \underline{\underline{0.586}}$ 3sf (1) (1)

Do you know where your cube root button is?

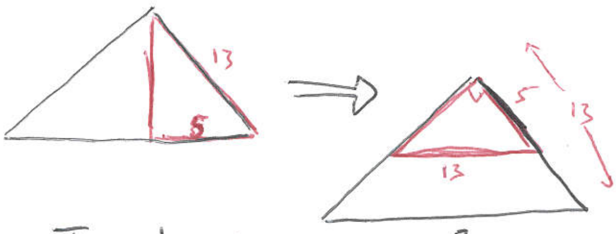
(13) $(3x-1)(x+5)(4x-3) = (3x^2 + 15x - x - 5)(4x-3)$ (1)

$= (3x^2 + 14x - 5)(4x-3)$

$= 12x^3 - 9x^2 + 56x^2 - 42x - 20x + 15$ (1)

$= 12x^3 + 47x^2 - 62x + 15$ (1) □

(14)



The triangles are similar! (1)

$\frac{?}{13} = \frac{13}{5}$ (1)

$? = 13 \times \frac{13}{5} = \underline{\underline{33.8}}$ (1)

Also possible using pythagoras & trigonometry but much longer to do.

FPP → Condensed Solutions (H)

(15)

$T = kL^{1/2}$ (1)

$\sqrt{1.4} = 1.18$

new length $= 1.4L$ (1)

then $T = k \times (1.4L)^{1/2}$

$= 1.18 \times kL^{1/2}$ (1)

i.e. Time period has increased by 18%

(16)

Freq den $= 20/100 = 0.2$ (1)

This sets the scale on the y axis

Total freq (less than £200 000) $= 100 \times 0.14 + 50 \times 0.6 + 50 \times 0.8$ (1)

$= 84$ (1)

(17)

1	3	7	13	21	
	2	4	6	8	
		2	2	2	$\rightarrow n^2$ (1)

1	4	9	16	25	n^2
1	3	7	13	21	seq
0	1	2	3	4	difference (1)

This is the sequence $n-1$

nth term is $n^2 - (n-1) = n^2 - n + 1$ (1)

FPP ⇒ Condensed Solutions

H

(18)

$f(x) = 3x^2 - 2x - 8$

$f(x+2) = 3(x+2)^2 - 2(x+2) - 8$ 1

$= 3(x^2 + 4x + 4) - 2x - 4 - 8$ 1

$= 3x^2 + 12x \cancel{+ 12} - 2x \cancel{- 12}$

$= \underline{3x^2 + 10x}$ 1

(19)

$2.5 = \frac{1}{2}x(x-2)$ 1

$\Rightarrow 5 = x(x-2)$

$\Rightarrow 0 = x^2 - 2x - 5$ 1

$\Rightarrow 0 = (x-1)^2 - 6$

$\Rightarrow 6 = (x-1)^2$

$\Rightarrow \sqrt{6} + 1 = x$ 1 Ignore $x < 0$

You can express x as a decimal, 3.449

Hypotenuse $= \sqrt{x^2 + (x-2)^2}$

$= \sqrt{x^2 + x^2 - 4x + 4}$

$= \sqrt{2x^2 - 4x + 4}$ 1

hypotenuse = 3.74 if you evaluate

Perimeter $= x - 2 + x + \sqrt{2x^2 - 4x + 4}$ 1

$= 2x - 2 + \sqrt{2x^2 - 4x + 4}$

$= \underline{8.64}$ 1

accept values between 8.63 & 8.65.

20 a)

Draw a tangent at $t = 6$ 1

Find gradient of your tangent

Answer should be between 3 & 4. 1

FPP ⇨ Condensed Solutions (H)

20b/ See also last page

Distance = Area under graph

$= \frac{1}{2} \times 4 \times 35 + \frac{1}{2}(35+51) \times 4 + \frac{1}{2}(51+54) \times 4$ 1 1

$= \underline{\underline{452m}}$ 1

21/

2015	9500	
2016	$1.05(9500 - 250) = 9712.5$	1
2017	$1.05(9712.5 - 250) = 9935.625$	
2013	$1.05(9935.625 - 250) = 10169.90625$	1

$= \underline{\underline{10170}}$ 1 accept ~~1017~~ $\underline{\underline{10169}}$.

22/

$x \to 99.75$, $x \to 99.65$ $y \to 67.5$, $y \to 66.5$ 1 any bound

$D_{upper} = \frac{99.75}{66.5} = \underline{\underline{1.5}}$ 1 1

23/ Gradient OP $= 3/4$

Gradient tangent $= -4/3$ 1

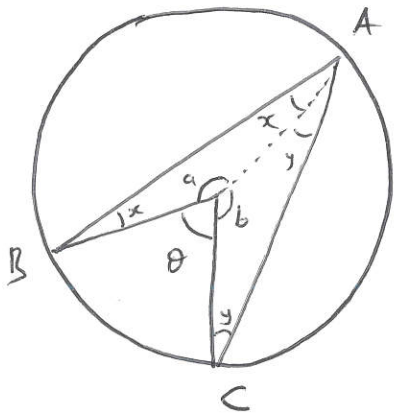
equation tangent $y = -4/3 x + c$ 1

at P $3 = -4/3 \times 4 + c$

$\Rightarrow c = 25/3$

equation is $y = -\frac{4}{3}x + \frac{25}{3}$ 1

24



Let $B\hat{O}C = \theta$

$B\hat{O}A = a$

$C\hat{O}A = b$ 1

$O\hat{B}A = x$

$O\hat{C}A = y$

Since OB, OC & OA are all radii then both triangles OBA & OCA are isosceles.

Thus $OAB = x$ also 1

& $OAC = y$.

Since angles in triangle sum to 180°

we have $2x + a = 180$

and $2y + b = 180$ + 1

giving $2x + 2y + a + b = 360$

or $2x + 2y = 360 - (a+b)$

but $\theta = 360 - (a+b)$ since angles around a point sum to 360°.

Thus $2x + 2y = \theta$ 1

$\Rightarrow 2(x+y) = \theta$

$\Rightarrow 2B\hat{A}C = B\hat{O}C$ □

FPP ⇨ Condensed Solutions

H

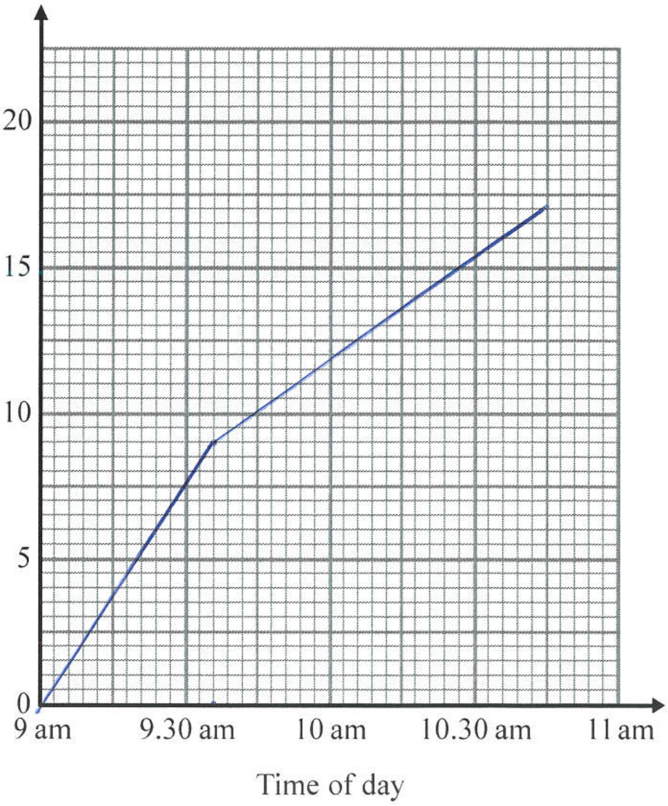
5

a/ ~~Distance~~ Distance = Speed × Time

$= 15 \times \frac{36}{60}$

= 9 km

9 + 8 = 17



b/ Distance $= 18 \times \frac{15}{60}$

= 4.5 km

20