ADA PINPOINT PACKS

32_to_58_Percent_Pinpoint_AI_Pack

Made for Grade2to3

AO1,2_and_3

ALL_Strands

Calc_Only

Created by A.D.A:

Pinpoints Automatic Differention Algorithmn

Designed and Programmed by

Tom Quilter, Anne Mcateer + Jon Hargreaves ... All maths teachers.

Question 1 (AO1): 67% of students got this right

1. Here is a list of numbers.

6 9 10 15 19 27

From the numbers in the list write down

(i) the square number,

.....

(ii) the prime number,

.....

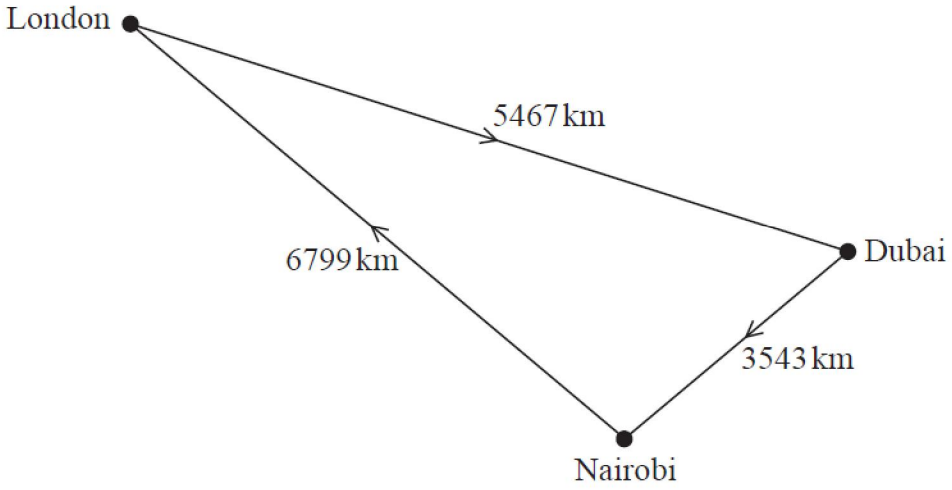
(iii) the cube number,

.....

(Total 3 marks)

Question 2 (AO1): 65% of students got this right

3. A plane flies from London to Dubai and then from Dubai to Nairobi.
Then the plane flies from Nairobi back to London.



The distance the plane flies from London to Dubai and then to Nairobi is further than the distance the plane flies from Nairobi back to London.

(*b*) How much further?

..... km
(2)

(Total 3 marks)

Question 3 (AO2): 65% of students got this right

6 Here is a list of numbers.

12 15 14 17 22 19 13

Bridgit says,

"To work out the median you find the middle number,
so the median of these numbers is 17"

Bridgit's answer is **not** correct.

(*a*) What is wrong with Bridgit's method?

(1)

(*b*) Work out the range of the numbers in the list.

(2)

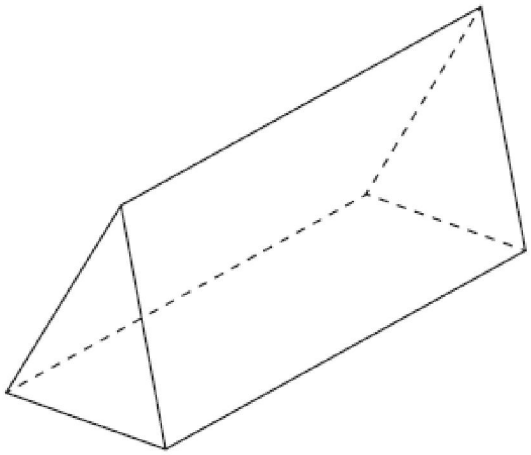
(*c*) Work out the mean of the numbers in the list.

(2)

(Total for Question 6 is 5 marks)

Question 4 (AO1): 64% of students got this right

9. The diagram shows a solid prism.



Write down

(i) the number of vertices

.....

(ii) the number of faces

.....

(iii) the number of edges

.....

(Total 3 marks)

Question 5 (AO1): 63% of students got this right

12 Put a pair of brackets in each statement to make the statement true.

(i) $2 \times 7^2 - 2 = 94$

(ii) $16 \div 2 + 6 + 2 = 4$

Question 6 (AO1): 62% of students got this right

6 1 kg = 2.2 pounds

Change 319 pounds to kg.

Question 7 (AO1): 61% of students got this right

10. Noah got 8 out of 20 in a test.

Write 8 out of 20 as a percentage.

..... %

(Total 2 marks)

Question 8 (AO1): 60% of students got this right

6. (ii) Change 2.5 kilograms to grams.

..... grams
(1)

Question 9 (AO1): 59% of students got this right

1. Write 0.013 as a fraction.

.....

(Total 1 mark)

Question 10 (AO1): 58% of students got this right

17 Solve $7 = \frac{140}{x}$

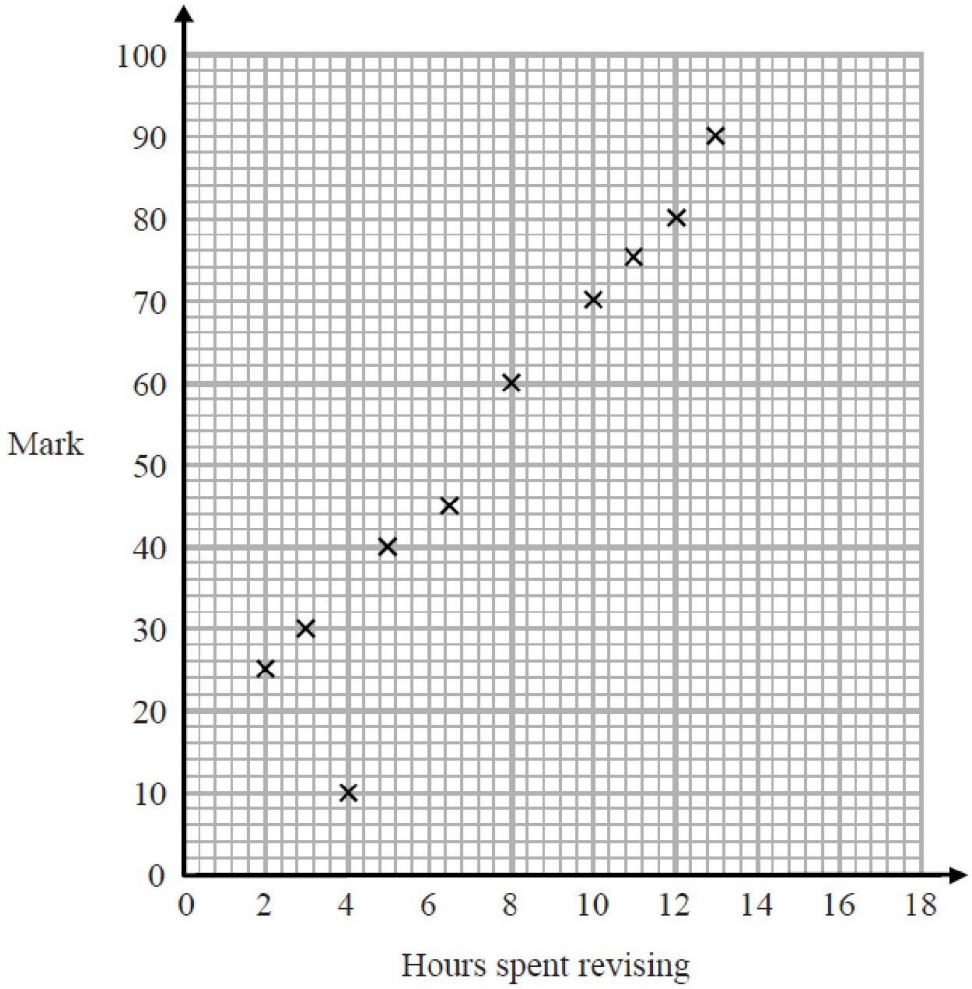
.....

(Total for Question 17 is 1 mark)

Question 11 (AO2): 57% of students got this right

21 The scatter diagram shows information about 10 students.

For each student, it shows the number of hours spent revising and the mark the student achieved in a Spanish test.



One of the points is an outlier.

(*a*) Write down the coordinates of the outlier.

For all the **other** points

(*b*) (i) draw the line of best fit,

(ii) describe the correlation.

A different student revised for 9 hours.

(*c*) Estimate the mark this student got

The Spanish test was marked out of 100.

Question 12 (AO1): 56% of students got this right

15 (*b*) Work out $(6 - 2.5)^2 + \sqrt{9.34 - 2.58}$

Question 13 (AO2): 55% of students got this right

10 Draw **two** straight lines inside the rectangle to split it into

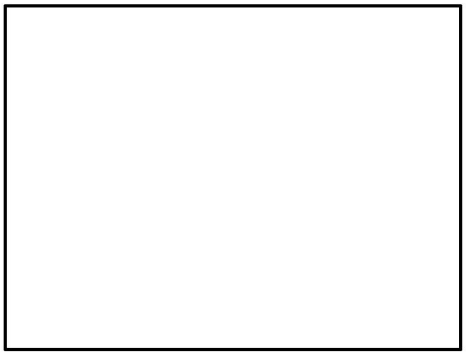
1 trapezium

and

2 right-angled triangles.

[2 marks]

Practise on this diagram.

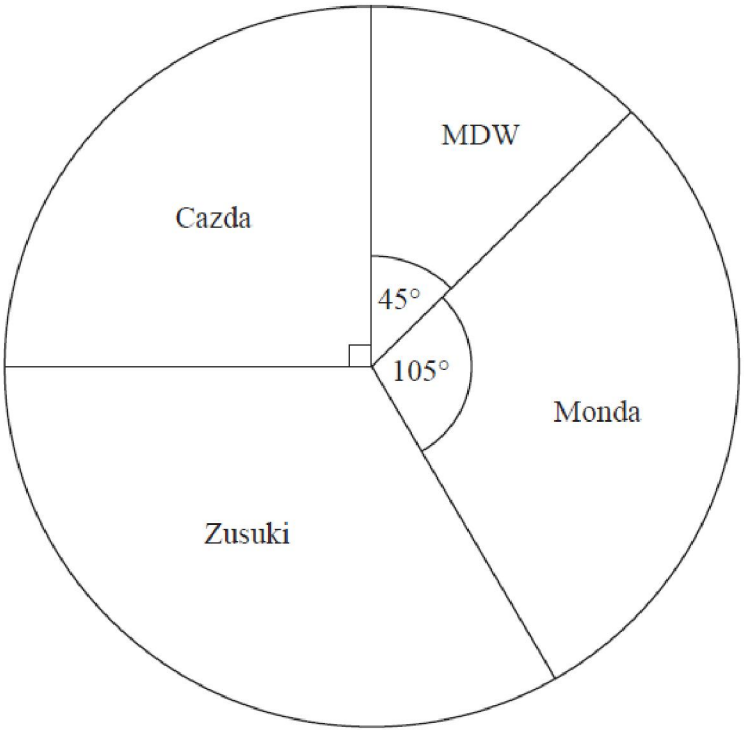


Put your answer on this diagram.

Question 14 (AO1): 54% of students got this right

6. Some drivers are asked which make of car they like best.

The pie chart and table show some information about their answers.



Complete the table.

Make of car	Number of drivers	Angle of sector
MDW	18	45°
Cazda	.....	90°
Zusuki	48	.....
Monda	.....	105°

(Total 4 marks)

Question 15 (AO1): 54% of students got this right

12. An internet bookshop uses this advert.

Each day every 3rd customer gets a mystery prize.
Each day every 20th customer gets free postage and packaging.

On Tuesday the internet bookshop had 150 customers.

(a) How many of the 150 customers got a mystery prize?

.....
(2)

(b) How many of the 150 customers got free postage and packaging?

.....
(2)

(c) How many of the 150 customers got both a mystery prize **and** free postage and packaging?

.....
(2)

(Total 6 marks)

Question 16 (AO2): 53% of students got this right

16. Brian wants to go on holiday.
He is going to take out a loan of £500 to help pay for the holiday.

Brian will have to pay back the £500 plus 20% interest over 12 months.
He will pay back the same amount of money each month.

How much money will he need to pay back each month?

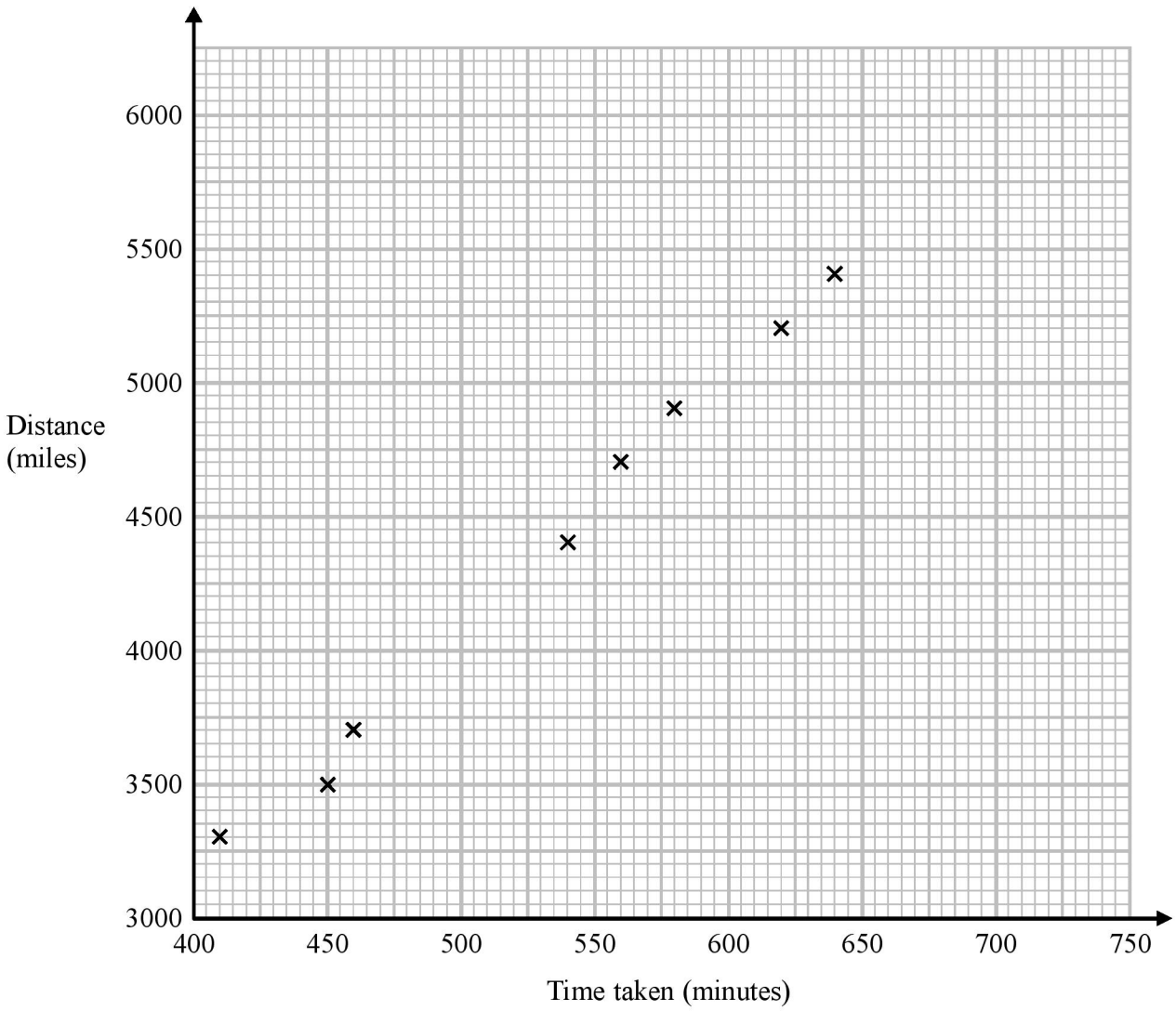
£ .....

(Total 4 marks)

Question 17 (AO1): 53% of students got this right

19 Oliver records the distance from London to each of eight cities in the USA.
He also records the time taken to fly from London to each of these cities.

The scatter graph shows this information.



Chicago is a city in the USA.
Chicago is 4000 miles from London.

(*a*) (i) By drawing a line of best fit, find an estimate for the time taken to fly from London to Chicago.

(ii) Why is your answer to part (i) only an estimate?

Question 18 (AO2): 51% of students got this right

11. Here is a rule for working out the volume of a pyramid.

Multiply the base area by the height and then divide by 3

A pyramid has a base area of 9 cm^2 and a height of 4 cm.

(*a*) Use the rule to work out the volume of this pyramid.

..... cm^3

(2)

A different pyramid has a volume of 20 cm^3.
The base area of this pyramid is 10 cm^2.

(*b*) Work out the height of this pyramid.

..... cm

(3)

(Total 5 marks)

Question 19 (AO1): 51% of students got this right

10. Some of the land in the Netherlands is used to grow bulbs.
The table shows the percentages of this land used to grow the different types of bulbs.

Type of bulb	**Hyacinth**	**Tulip**	**Daffodil**	**Lily**	**Other**
Percentage	8%	50%	12%	x%	7%

(a) Work out the value of x.

x = ...
(1)

The area of land used to grow bulbs for hyacinths is 1200 hectares.

(b) Work out the area of land used to grow bulbs for daffodils.

.....hectares
(2)

(Total 3 marks)

Question 20 (AO1): 50% of students got this right

5. Here are four numbers.

$$0.43 \qquad \frac{3}{7} \qquad 43.8\% \qquad \frac{7}{16}$$

(*b*) Write these numbers in order of size.
Start with the smallest number.

.....

(2)

Question 21 (AO3): 49% of students got this right

15. Norma makes bags.
She makes 17 bags an hour.
Norma works for 6 hours each day, 5 days a week.

Each bag is checked.
If the bag is perfect, it is put in a box.
When there are 12 bags in a box it is full.

One week 90% of the bags Norma made were perfect.

Work out the number of boxes completely filled with bags made by Norma.

.....

(Total for Question 15 is 5 marks)

Question 22 (AO3): 48% of students got this right

20 Kris is simplifying $3n^5 \times 2n^4$

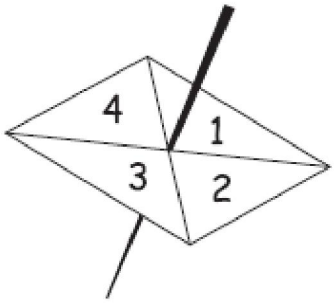
His answer is $5n^{20}$

Identify any mistakes he has made.

[2 marks]

Question 23 (AO1): 47% of students got this right

12. Here is a four-sided spinner.
The spinner is biased.



The table shows the probabilities that the spinner will land on 1 or on 3

Number	1	2	3	4
Probability	0.2		0.1	

The probability that the spinner will land on 2 is the same as the probability that the spinner will land on 4

(a) Work out the probability that the spinner will land on 4

.....
(3)

Shunya is going to spin the spinner 200 times.

(b) Work out an estimate for the number of times the spinner will land on 3

.....
(2)

(Total 5 marks)

Question 24 (AO1): 46% of students got this right

13. The table shows some information about the ages of 60 teachers.

Age (a years)	**Frequency**
$20 < a \leq 30$	6
$30 < a \leq 40$	16
$40 < a \leq 50$	14
$50 < a \leq 60$	22
$60 < a \leq 70$	2

(a) Write down the modal class interval.

.....

(1)

Question 25 (AO1): 45% of students got this right

9 Davos is a cleaner.

The table shows information about the time it will take him to clean each of four rooms in a house.

Room	Time
Kitchen	2 hours
Sitting room	1 hour 40 minutes
Bedroom	$1\frac{1}{2}$ hours
Bathroom	45 minutes

Davos wants to clean all four rooms in one day.
He will have breaks for a total time of 75 minutes.

Davos is going to start cleaning at 9 a.m.

Will he finish cleaning by 4 p.m.?
You must show all your working.

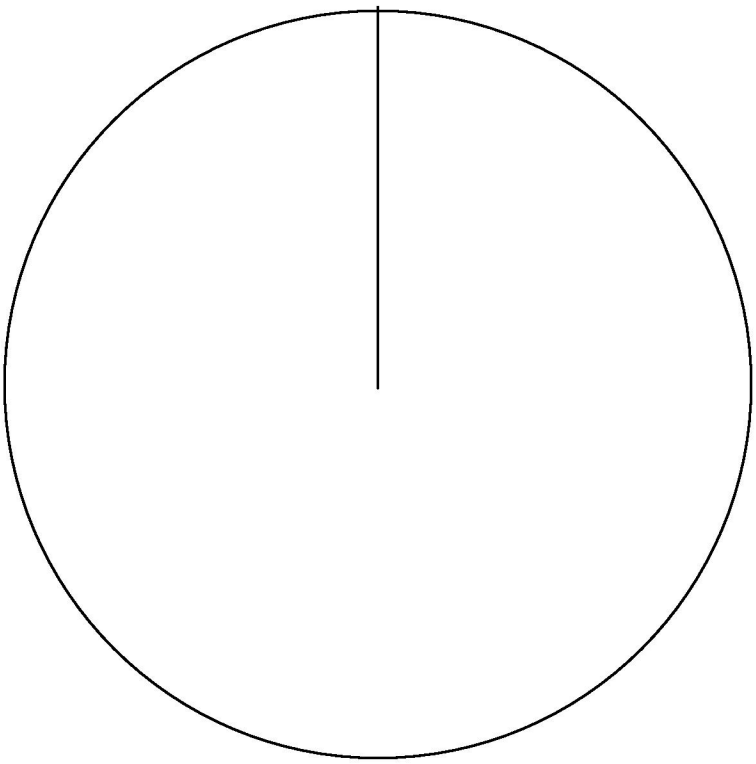
(Total for Question 9 is 3 marks)

Question 26 (AO1): 45% of students got this right

9. There are 120 cars in a car park.

Colour of car	**Frequency**
Red	40
Silver	24
Blue	19
Other	37

Draw an accurate pie chart for this information.

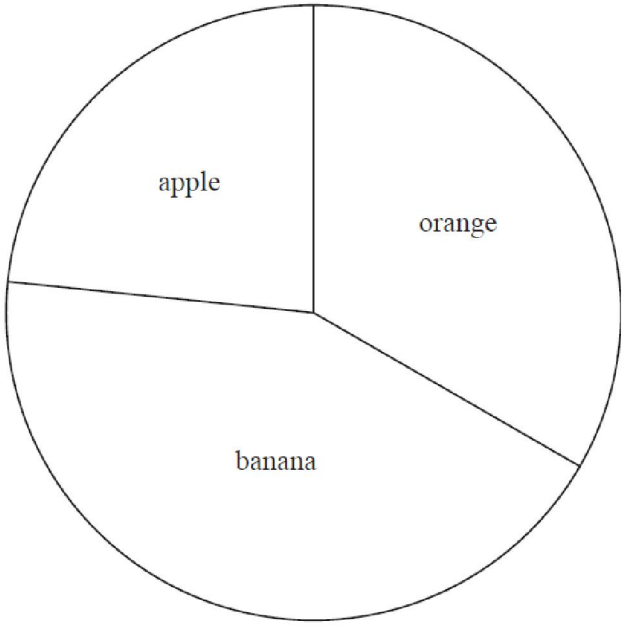


(Total 3 marks)

Question 27 (AO1): 44% of students got this right

8 Pete also carried out a survey to find out the type of fruit people like best.
He asked 30 people which type of fruit they like best.

He drew this pie chart for his results.



A smaller proportion of people like bananas best in Pete's survey than in Rachel's survey.

(*c*) Explain how Pete's pie chart and Rachel's table show this.

Question 28 (AO1): 43% of students got this right

18 Andy flies from the UK to Japan.
His plane ticket costs £554.

Andy then flies from Japan to Australia.
His plane ticket costs 70 140 Japanese Yen.
The exchange rate is £1 = 140 Japanese Yen.

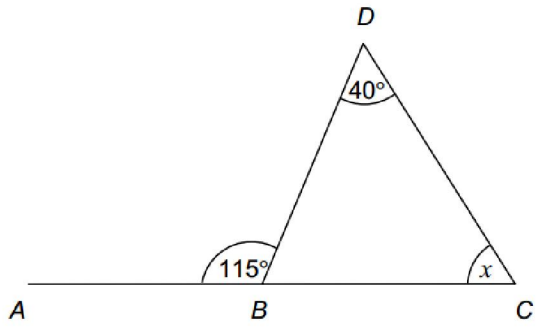
Leila flies from the UK to Australia.
Her plane ticket costs 1860 Australian dollars.
The exchange rate is 1 Australian dollar = £0.62.

Who pays more to fly from the UK to Australia, Andy or Leila?

You must show clearly how you get your answer.

Question 29 (AO1): 42% of students got this right

15 Han is trying to work out the size of angle x.

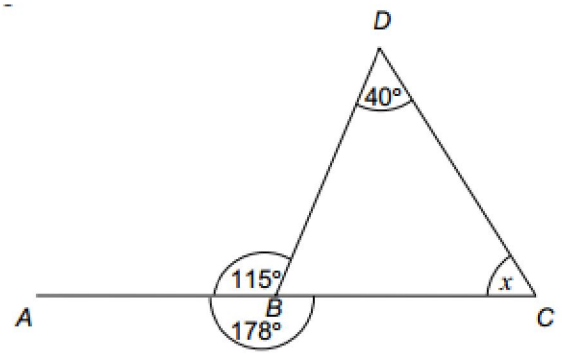


Not drawn accurately

15 (a) He assumes that *ABC* is a straight line.
What answer should he get?

[2 marks]

15 (b) In fact, angle *ABC* is 178°, as shown.



Not drawn accurately

WWhat effect does this have on the size of angle x ?

[1 mark]

Answers to Qn 1 (AO1): 67% of students got this right

1.	(i)		9	1	B1
	(ii)		19	1	B1
	(iii)		27	1	B1

Answers to Qn 2 (AO1): 65% of students got this right

Question		Working	Answer	Mark	Notes
3.	(b)	5467 + 3543 – 6799 oe			M1
			2211		A1

Answers to Qn 3 (AO2): 65% of students got this right

Paper: 1MA1/3F				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		Reason	C1	reason, eg must order numbers first
(b)		10	M1	for 22 − 12 or 12 − 22 or 12 to 22
			A1	cao
(c)		16	M1	for adding the numbers and dividing by 7
			A1	cao

Answers to Qn 4 (AO1): 64% of students got this right

Question		Working	Answer	Mark	Notes
9.	(i)		6	3	B1 cao
	(ii)		5		B1 cao
	(iii)		9		B1 cao

Answers to Qn 5 (AO1): 63% of students got this right

Question	Working	Answer	Mark	Notes
12 (i)		$2 \times (7^2 - 2) = 94$	B1	for brackets correctly placed
12 (ii)		$16 \div (2 + 6) + 2 = 4$	B1	for brackets correctly placed

Answers to Qn 6 (AO1): 62% of students got this right

Question	Working	Answer	Mark	Notes
6		145	M1 A1	for 319 ÷ 2.2 cao

Answers to Qn 7 (AO1): 61% of students got this right

Question		Working	Answer	Mark	Notes
10		$(8 \div 20) \times 100$	40	2	M1 for $(8 \div 20) \times 100$ or $\frac{40}{100}$ or $\frac{8}{20} = \frac{8\times5}{20\times5}$ A1 cao

Answers to Qn 8 (AO1): 60% of students got this right

Question		Working	Answer	Mark	Notes
6.	(a)		2500		B1 cao
	(ii)				

Answers to Qn 9 (AO1): 59% of students got this right

1MA1 Practice papers Set 2: Paper 2F (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
1.			$\frac{13}{1000}$	1	B1 cao

Answers to Qn 10 (AO1): 58% of students got this right

17 Solve $7 = \frac{140}{x}$

$x = \frac{140}{7}$

$x = 20$

Answers to Qn 11 (AO2): 57% of students got this right

Paper 1MA1: 3F			
Question	**Working**	**Answer**	**Notes**
21(a)		(4,10)	B1 cao
21(b)(i)		Line drawn	B1 Straight line drawn passing between (2,20) and (2,30) AND (13,86) and (13,94)
21(b) (ii)		Positive	C1 positive
21(c)		Value between 60 and 70	C1 a correct value given
21(d)		Statement	C1 for referring to the danger of extrapolation outside the given range or for a given point Eg line of best fit may not continue or full marks are hard to achieve no matter how much revision is done

Answers to Qn 12 (AO1): 56% of students got this right

Paper 1MA1: 2F			
Question	**Working**	**Answer**	**Notes**
15 b		14.85	M1 for 12.25 or 2.6 A1

Answers to Qn 13 (AO2): 55% of students got this right

10 Draw **two** straight lines inside the rectangle to split it into

1 trapezium

and

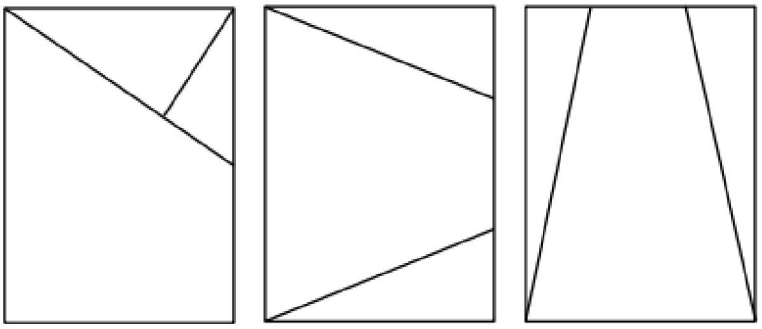
2 right-angled triangles.

[2 marks]

Practise on this diagram.

Put your answer on this diagram.

Solutions (One of the following):



Answers to Qn 14 (AO1): 54% of students got this right

Question		Working	Answer	Mark	Notes
6			36	1	B1 cao for Cazda
			120°	1	B1 cao for Zusuki
			42	2	M1 for correct method from using 105° e.g. 18 ÷ 45 × 105, “36” ÷ 90 × 105 or from table, e.g. Cazda “36” × 4−(18+36+48) A1 for 42 or ft values from their table.

Answers to Qn 15 (AO1): 54% of students got this right

12.	(a)	150 ÷ 3 OR 3, 6, 9, 12, 15, (…)	50	2	M1 for 150 ÷ 3 or at least the first 5 multiples of 3 which may come from addition or subtraction A1 cao
	(b)		7	2	M1 for 150 ÷ 20 or 7.5 seen or multiples of 20 up to 140 or up to 160 or subtracting 20s down to 10 or −10 A1 cao
	(c)	3 × 20 = 60 150 ÷ 60 **OR** 20,40,<u>60</u>,80,100,<u>120</u>,140 3, 6, …, <u>60</u>, …, <u>120</u>, …	2	2	M1 for 20 × 3 or 60 seen or 150 ÷ 60 (or equivalent) A1 cao **OR** M1 for listing 20 times table with 60 or 120 identified or listing 3 times table with 60 or 120 or 180 identified A1 cao

Answers to Qn 16 (AO2): 53% of students got this right

Question		Working	Answer	Mark	Notes
16.		500 × 1.2 (oe) = 600 600 ÷ 12 =	50	4	M2 for 500 × 1.2 (= 600) (oe) (M1 for 500 × 0.2 (= 100) (oe) M1 for 600 ÷ 12 or 100 ÷ 12 or 1.2 ÷ 12 or 500 ÷ 12 A1 cao

Answers to Qn 17 (AO1): 53% of students got this right

Question	Working	Answer	Mark	Notes
19 (a)(i)		480 – 500	B1 B1	for line of best that can be used to estimate time of flight for 480 – 500 or ft lobf
19 (a)(ii)		reason	C1	for reason, e.g. lobf can vary, data is only a sample, scale cannot be read exactly

Answers to Qn 18 (AO2): 51% of students got this right

11.	(*a*)		12	2	M1 for $9 \times 4 \div 3$ oe A1 cao
	(*b*)		6	3	M1 for a correct first step e.g. 20×3 (= 60) or $20 \div 10$ (= 2) or giving equation e.g. $10h \div 3 = 20$ M1 for complete method to give height e.g. '60' ÷ 10 or '2' × 3 or $h = 20 \times 3 \div 10$ oe A1 cao

Answers to Qn 19 (AO1): 51% of students got this right

10.	(b)		23	3	B1
	(b)	1200 ÷ 8 × 12			M1 1200 ÷ 8 × 12 (or equivalent)
			1800		A1

Answers to Qn 20 (AO1): 50% of students got this right

5.	(*b*)	43%, 42.8.%, 43.8%, 43.75%	$\frac{3}{7}$ 0.43 $\frac{7}{16}$ 43.8%	2	M1 Convert at least 2 of the 3 correctly to percentages or decimals A1 correct order. Accept written in any correct form. SC: Award B1 (1 mark only) if ordered largest to smallest

Answers to Qn 21 (AO3): 49% of students got this right

15		38	P1 P1 P1 A1 C1	for a process to begin the problem, e.g. 90% of 17 or number of bags per week (= 510) (dep P1) for a complete process to find the number of perfect bags per week eg “510” × 0.9 (= 459) (dep P1) for dividing the number of perfect bags by 12, e.g. “459” ÷ 12 (=38.25) 38.25 or 38 given as the answer ft For rounding their answer to a full number of boxes

Answers to Qn 22 (AO3): 48% of students got this right

20 Kris is simplifying $3n^5 \times 2n^4$

His answer is $5n^{20}$

Identify any mistakes he has made.

[2 marks]

5 should be 6 as (3×2 = 6)

20 should be 9 as law of indices (powers with same base are to be added)

$6n^9$

Answers to Qn 23 (AO1): 47% of students got this right

Question		Working	Answer	Mark	Notes
12	(a)	$1 - 0.2 - 0.1$ $0.7 \div 2$	0.35	3	M1 for correctly using total probability 1 or 100% if percentages used M1 (dep) for complete correct method to complete the solution A1 for 0.35 or 35% oe
	(b)	0.1×200	20	2	M1 for 0.1×200 A1 cao

Answers to Qn 24 (AO1): 46% of students got this right

Question		Working	Answer	Mark	Notes
13	(a)		$50 < a \leq 60$	1	B1 for correctly identifying the modal class interval e.g. 50 – 60 oe

Answers to Qn 25 (AO1): 45% of students got this right

Paper: 1MA1/3F				
Question	**Working**	**Answer**	**Mark**	**Notes**
9		No (supported)	P1	for finding a time difference e.g. length of day (=7 h or 420 min) or adding at least two of the five times on to 9 am or adding all the room times given (= 5 h 55 min or 355 min) or adding all five times given (=7 h 10 min or 430 min)
			P1	for a complete process to inform final decision eg finds length of day (= 7 h) and total of all five times (=7 h 10 min) **or** starts at 9am and adds on all five times to find finishing time (= 4.10 pm)
			C1	NO supported by correct values eg 4.10 pm **or** 7 h and 7 h 10 min **or** 420 min and 430 min

Answers to Qn 26 (AO1): 45% of students got this right

9.		360 ÷ 120 × 40 120, 72, 57, 111	pie chart	3	M1 method to find angle for any sector in pie chart M1 correct angles for sectors **or** two sectors drawn correctly A1 with angles 120, 72, 57, 111 and sectors labelled

Answers to Qn 27 (AO1): 44% of students got this right

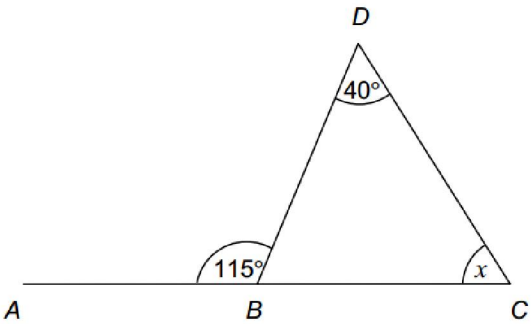
Paper 1MA1: 2F			
Question	**Working**	**Answer**	**Notes**
8 (c)		explanation	C2 for full explanation, eg table shows exactly ½ ; pie chart shows less than ½ as angle is less than 180° (C1 for partial explanation or reference to just pie chart or just table)

Answers to Qn 28 (AO1): 43% of students got this right

Question	Working	Answer	Mark	Notes
18		Leila from correct figures	P1	for process to change 70 140 Yen e.g. to £ by 70 140 ÷ 140 (= 501)
			P1	for complete process to find total cost of Andy's tickets, e.g. 70 140 ÷ 140 + 554 (= 1055)
			P1	for process to change 1860 dollars to £, e.g. 1860 × 0.62 (= 1153.2) or a method to change Andy's cost to dollars
			A1	for Leila with comparative figures of 1055 and 1153.2(0) [or 1701.61 dollars; or 147700 & 161448 Yen]

Answers to Qn 29 (AO1): 42% of students got this right

15 Han is trying to work out the size of angle *x*.



Not drawn accurately

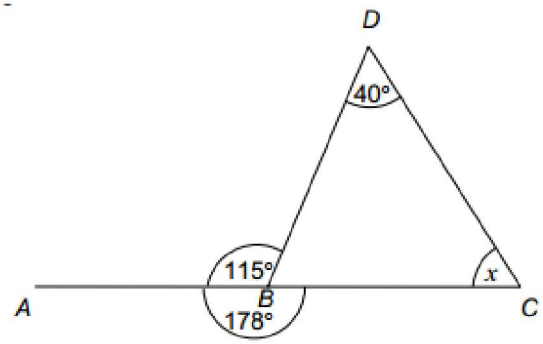
15 (a) He assumes that *ABC* is a straight line.
What answer should he get? **[2 marks]**

180 – 115 = 65

180 – (65 + 40)

Answer 75 degrees

15 (b) In fact, angle *ABC* is 178°, as shown.



Not drawn accurately

What effect does this have on the size of angle *x* ?

[1 mark]

x will be (2°) smaller