ADA PINPOINT PACKS

49_to_68_Percent_Pinpoint_AI_Pack

Made for Grade3to4

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): 51% of students got this right

18. Fleur is a gardener in a park.
She buys trays of plants to plant in the park.
The plants will have flowers that are red or yellow or white or blue.

The table gives the probabilities that a flower will be red or yellow or blue.

Colour	red	yellow	white	blue
Probability	0.2	0.3		0.1

(a) What is the probability that a flower will be white?

....
(2)

There are 120 plants in a tray.

(b) Work out an estimate for the number of these plants that will have red flowers.

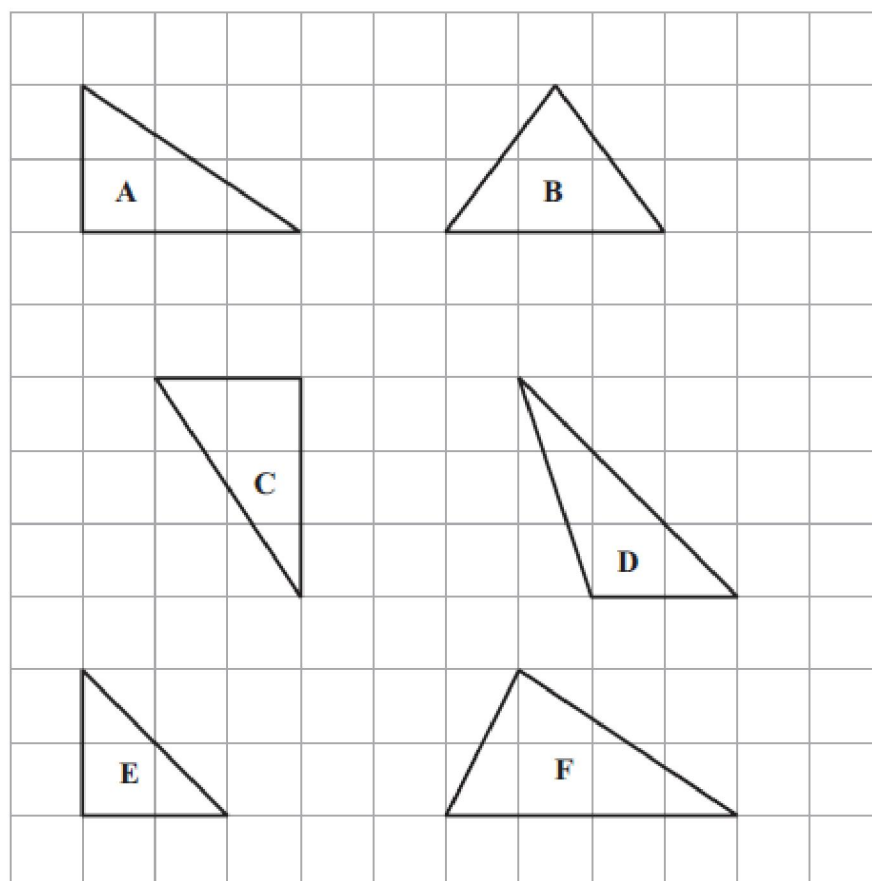...
(2)

Question 2 (AO2): 50% of students got this right

14 a and b are odd numbers.

(*a*) Give an example to show that the value of $2(a + b)$ is a multiple of 4.

Question 3 (AO1): 49% of students got this right

17. Here are 6 triangles drawn on a grid of centimetre squares.

(c) Find the area of triangle **E**.

.... cm^2

(1)

(Total 3 marks)

Question 4 (AO1): 49% of students got this right

2.   Write these numbers in order of size.
        Start with the smallest number.

        0.74   0.744   0.704   0.7   0.07

Question 5 (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 6 (AO2): 47% of students got this right

10   The manager of a clothes shop recorded the size of each dress sold one morning.

```
10   10
12   12
14   14   14   14   14   14
16   16   16   16
18   18   18
20   20   20
```

The sizes of dresses are always even numbers.
The mean size of the dresses sold that morning is 15.3.

The manager says,

        "The mean size of the dresses is **not** a very useful average."
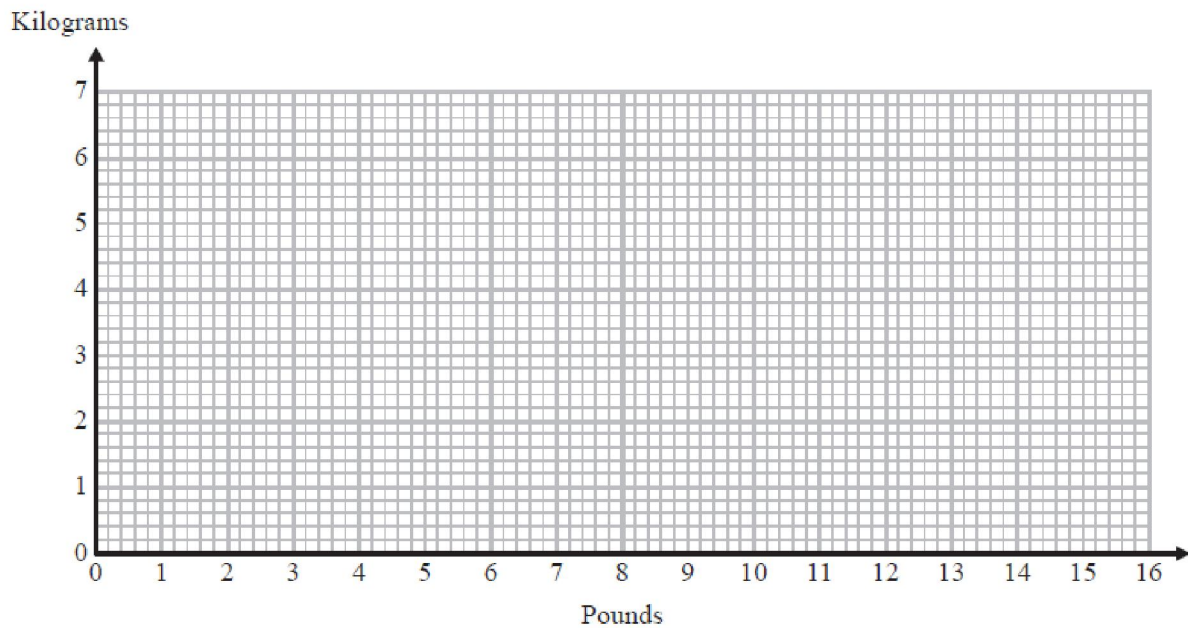
(i)   Explain why the manager is right.

(ii)   Which is the more useful average for the manager to know, the median or the mode?
You must give a reason for your answer.

Question 7 (AO1): 47% of students got this right

13. Mary works in a maternity unit.
    She weighs the babies.

    The table shows some weights in both pounds and kilograms.

pounds	4.4	6.6	8.8	11	13.2	15.4
kilograms	2	3	4	5	6	7

(b) Change 10 pounds to kilograms.

.... kilograms
(1)

(c) Change 6.5 kilograms to pounds.

.... pounds
(1)

(Total 4 marks)

Question 8 (AO3): 46% of students got this right

12. This accurate scale drawing shows two ports, **A** and **B**.

Scale: 1 cm represents 10 miles.

A boat takes 5 hours to sail directly from **A** to **B**.
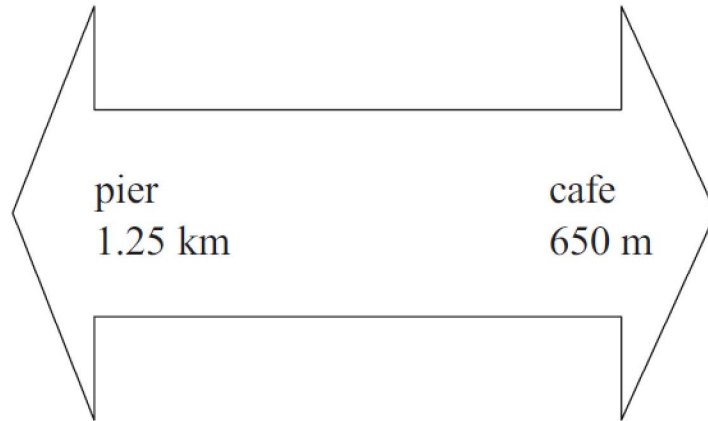
Calculate the boat's average speed.
You must show all your working.

.... mph

(Total for Question 12 is 3 marks)

Question 9 (AO1): 45% of students got this right

13.   John is walking along a path.
He sees this sign.

How far is it from the pier to the cafe along the path?

....

(Total 3 marks)

_____

Question 10 (AO2): 45% of students got this right

10. Ravi buys some hats to sell at a school fete.
     He buys 40 hats for a total of £120

     Ravi sells $\frac{3}{4}$ of these hats at £4.50 each.

     He reduces the selling price of the remaining hats to £4 each.
     He sells half of the remaining hats at this selling price.

     Work out the profit that Ravi makes.

£...

Question 11 (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.
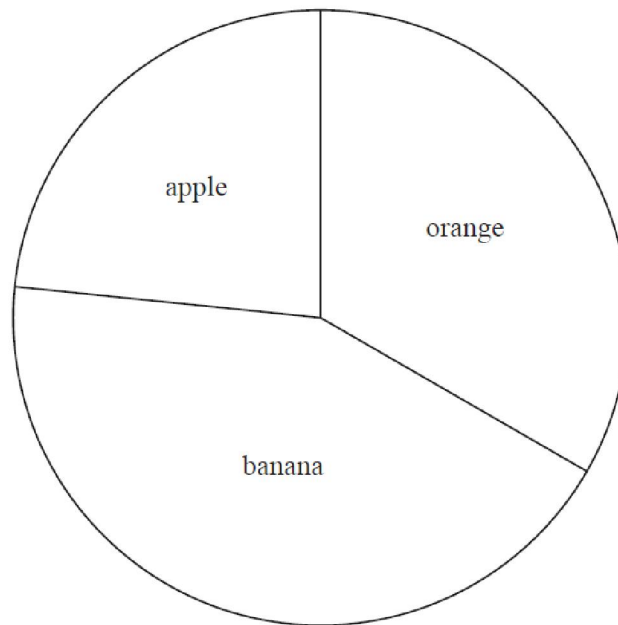
A smaller proportion of people like bananas best in Pete's survey than in Rachel's survey.

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

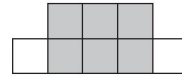# Question 12 (AO2): 43% of students got this right

5c   Here is a sequence of patterns made from grey squares and white squares.

pattern number 1   pattern number 2   pattern number 3

Aqsa says,

"The total number of squares needed to make pattern number 20 is double the total number of squares needed to make pattern number 10"

(c) Is Aqsa correct?
Give a reason for your answer.

....

....

....

(2)

Question 13 (AO2): 43% of students got this right

16. Nails of length 35 millimetres are sold in three sizes of packets.

There are 20 nails in a small packet, costing £1.36
There are 50 nails in a medium packet, costing £3.30
There are 90 nails in a large packet, costing £6.03

```
                                                   ┌─────────────────┐
                                                   │     Large       │
                                                   │                 │
                           ┌─────────────────┐     │     £6.03       │
                           │     Medium      │     │                 │
     ┌───────────────┐     │                 │     │                 │
     │    Small      │     │     £3.30       │     │                 │
     │               │     │                 │     │                 │
     │    £1.36      │     │                 │     │                 │
     │               │     │                 │     │    90 nails     │
     │   20 nails    │     │    50 nails     │     └─────────────────┘
     └───────────────┘     └─────────────────┘
```

(*a*) Which size of packet is the best value for money?
You must show clearly how you got your answer.

Question 14 (AO2): 42% of students got this right

6. Janet sends parcels by Parcel Express.
    The table shows information about the cost of sending a parcel by Parcel Express.

Parcel Express	
Weight range	**Cost**
Less than 2 kg	£3.80
2 kg to less than 5 kg	£5.99
5 kg to 10 kg	£71.4

The table below gives information about the numbers and weights of the parcels Janet sent in April and in May.

Number of parcels		
Weight range	**April**	**May**
Less than 2 kg	23	21
2 kg to less than 5 kg	28	27
5 kg to 10 kg	19	32

Janet could have sent her parcels by Parcels R Go.
The table below shows information about the cost of sending a parcel by Parcels R Go.

Parcels R Go	
Weight range	**Cost**
0–15 kg	£5.99

Janet thinks that it would have been cheaper to send all her parcels by Parcels R Go.

Is Janet right?
You must show your working.

Question 15 (AO1): 41% of students got this right

15 (*a*) Write 4.7×10^{-1} as an ordinary number.

(1)

(*b*) Work out the value of $(2.4 \times 10^{3}) \times (9.5 \times 10^{5})$
Give your answer in standard form.

(2)

(Total for Question 15 is 3 marks)

_____

Question 16 (AO1): 41% of students got this right

21   Here are the first five terms of an arithmetic sequence.

$$- 3 \qquad 1 \qquad 5 \qquad 9 \qquad 13$$

Find an expression, in terms of n, for the nth term of this sequence.

Question 17 (AO1): 40% of students got this right

7. The length of a bus is 10 metres.

Gurjeet makes a model of the bus.
He uses a scale of 1 cm to 40 cm.

Work out the length of the model of the bus.
Give your answer in centimetres.

.... cm

(Total 2 marks)

_____

Question 18 (AO2): 40% of students got this right

11   Polly has a full 5 kg sack of rice.
      She pours the rice from this sack into bags.
      She fills as many bags as possible.

      Each full bag contains 350 g of rice.

      Polly assumes that the rice from two sacks will fill twice as many bags as the rice from one sack.

      (*b*) Is Polly correct?

            You must give a reason for your answer.

Question 19 (AO1): 39% of students got this right

5(c)   Factorise $6n - 4$

....
                                                    (1)

Question 20 (AO1): 38% of students got this right

16   The table shows information about the number of children in each of 40 families.

Number of children	Frequency
0	6
1	13
2	12
3	7
4	2
5 or more	0

(*b*) Work out the total number of children.

Question 21 (AO1): 37% of students got this right

16   *(c)* Simplify $(m^3)^2$

Question 22 (AO1): 36% of students got this right

8   Sharon asked each of her friends to name their favourite Olympic sport.

The table below shows information about their answers.

Sport	Frequency
athletics	13
cycling	17
swimming	8
gymnastics	7

Draw an accurate pie chart opposite for this information.

Question 23 (AO3): 35% of students got this right

22 The time-series graph gives some information about the number of pairs of shoes sold in a shoe shop in the first six months of 2014.
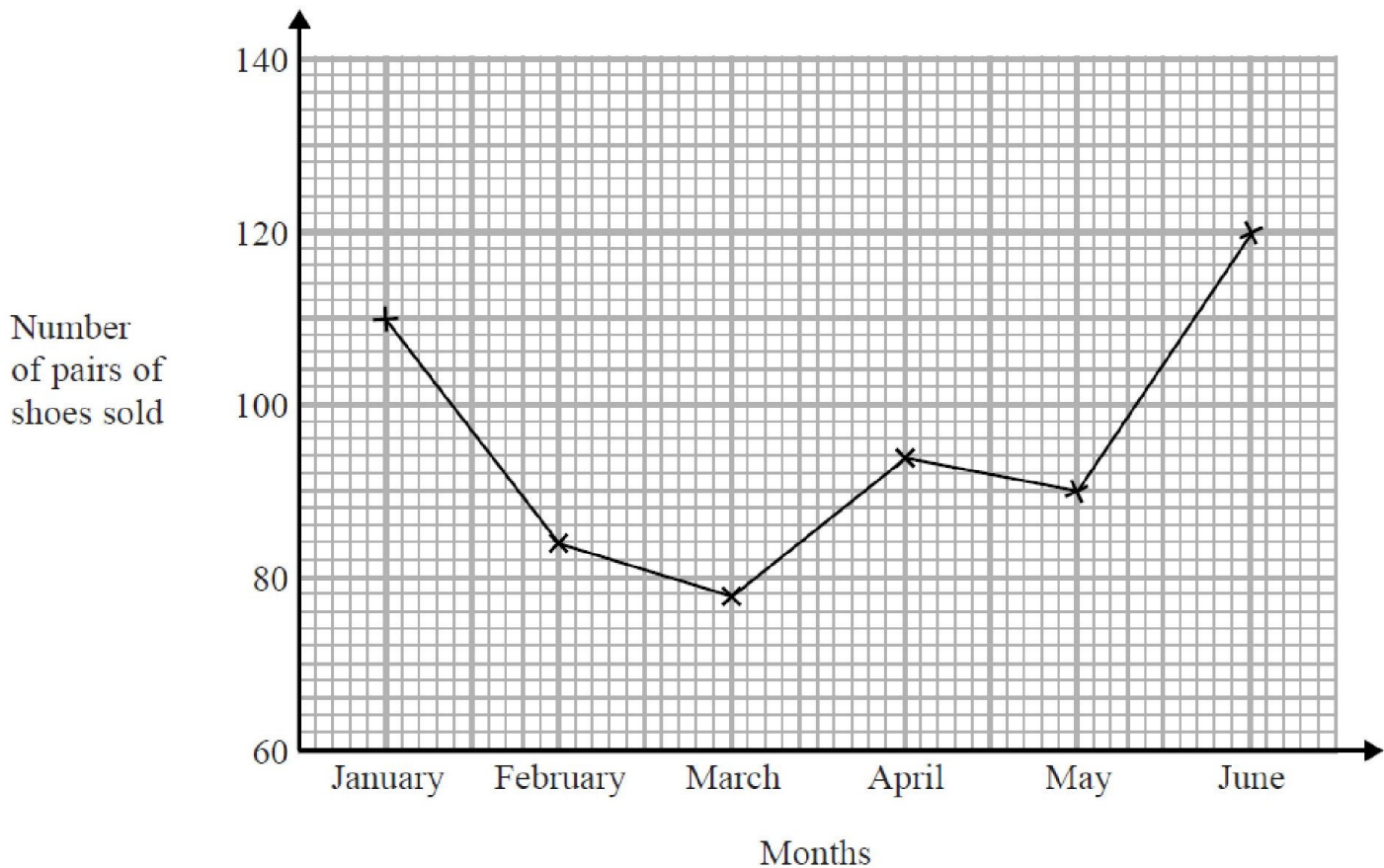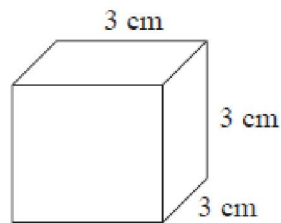

The sales target for the first six months of 2014 was to sell a mean of 96 pairs of shoes per month.

Did the shoe shop meet this sales target?
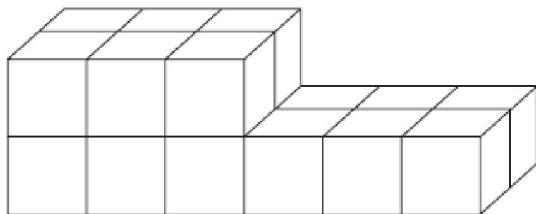You must show how you get your answer.

Question 24 (AO2): 34% of students got this right

11. Here is a solid cube.
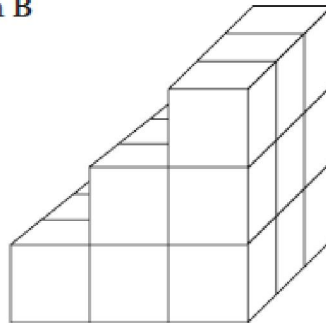

3 cm

3 cm

3 cm

Here are two solid prisms made from centimetre cubes.

prism **A**   prism **B**

(b) Compare the volume of prism **A** with the volume of prism **B**.

(3)

(Total 5 marks)

_____

Question 25 (AO1): 34% of students got this right

1.   Write down the value of the 5 in 7.052

....

(Total 1 mark)

_____

Question 26 (AO1): 33% of students got this right

16.   (a) Simplify $(c^2 k^5)^4$

....
(1)

Question 27 (AO2): 33% of students got this right

14 $\dfrac{7}{20}$ of the people at a football match are men.

22% of the people at the match are women.
The rest of the people at the match are children.

Work out what percentage of the people at the match are children.

....

(Total for Question 14 is 3 marks)

Answers to Qn 1 (AO1): 51% of students got this right

Question		Working	Answer	Mark	Notes
18.	(a)		0.4	2	M1 for $1 - (0.2 + 0.3 + 0.1)$ oe A1 for 0.4 oe
	(b)		24	2	M1 for 120×0.2 oe or $\dfrac{24}{120}$ A1 for 24

Answers to Qn 2 (AO2): 50% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
14 (a)	$a = 1$, $b = 3$, then $2 \times (1 + 3) = 8$	1	This mark is given for choosing two odd numbers and working out $2(a = b)$
	$8 \div 4 = 2$, so 8 is a multiple of 4	1	This mark is given for a correct statement

Answers to Qn 3 (AO1): 49% of students got this right

Question		Working	Answer	Mark	Notes
17	(c)		2	1	B1 cao

Answers to Qn 4 (AO1): 49% of students got this right

Question	Working	Answer	Mark	Notes
2		0.07, 0.7, 0.704, 0.74, 0.744	1	B1 cao

Answers to Qn 5 (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 6 (AO2): 47% of students got this right

Paper 1MA1: 2F			
Question	Working	Answer	Notes
10 i ii			C1 for correct criticism of use of mean, eg. C1 "there is no dress size of 15.3" Mode (=14) is most useful since it shows the most popular size

Answers to Qn 7 (AO1): 47% of students got this right

Question	Working	Answer	Mark	Notes
13. (b)		4.4 – 4.6	1	B1 for 4.4 – 4.6 or ft graph (dep on single straight line)
(c)		14.2 – 14.4	1	B1 for 14.2 – 14.4 or ft graph (dep on single straight line)

Answers to Qn 8 (AO3): 46% of students got this right

12		15	B1	for a measurement given as 7.3 to 7.7 (cm)
			M1	for "7.5" × 10 ÷ 5 where "7.5" is their measurement
			A1	(dep M1) ft

Answers to Qn 9 (AO1): 45% of students got this right

			13.	1.9 km or 1900 m	3	M1 for 1.25 × 1000 (= 1250) **or** 650 ÷ 1000 (= 0.65)
						M1 for "1250" + 650 or 1.25 +"0.65"
						A1 for 1.9 km or 1900 m

Answers to Qn 10 (AO2): 45% of students got this right

10		35	P1	for start to process, e.g. 40 ÷ 4 × 3 (=30) or 120 ÷ 40 (=3)
			P1	(dep P1) for (40 – "30") ÷ 2 (=5) or "30" × 4.5 (=135) or "30" × (4.5 – 3)
			P1	(dep P2) for process to find income, e.g. "30" × 4.5 (=135) and "5" × 4 (=20)
			P1	for a complete process leading to profit, e.g. "135"+ "20"−120
			A1	cao

Answers to Qn 11 (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 180º (C1 for partial explanation or reference to just pie chart or just table)

Answers to Qn 12 (AO2): 43% of students got this right

5c Here is a sequence of patterns made from grey squares and white squares.

pattern number 1   pattern number 2   pattern number 3
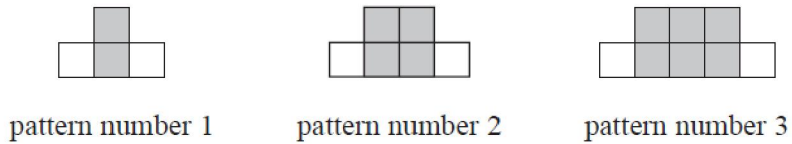
Aqsa says,

"The total number of squares needed to make pattern number 20 is double the total number of squares needed to make pattern number 10"

(c) Is Aqsa correct?
Give a reason for your answer.

Nth term: $2n$ + 2
n = 10 (2(10) + 2) = 22

n = 20 (2(20) + 2) = 42

Pattern number 20 is not double Pattern number 10

Answers to Qn 13 (AO2): 43% of students got this right

| 16. | (a) | (I cost per nail)
$1.36 \div 20 = 0.068$, $\quad 3.30 \div 50 = 0.066$, $\quad 6.03 \div 90 = 0.067$
(II e.g. number of nails for £1)
$20 \div 1.36 = 14.7$, $\quad 50 \div 3.30 = 15.1$, $\quad 90 \div 6.03 = 14.9$
(III e.g. cost for 20 nails)
$3.30 \div 50 \times 20 = 1.32$, $6.03 \div 90 \times 20 = 1.34$
(IV using multipliers)
$50 \div 20 = 2.5$ and $\quad 3.30 \div 1.36 = 2.42$ $\quad 90 \div 50 = 1.8$ and $6.03 \div 3.30 = 1.82$ | Medium + reason | 4 | M1 for correct method to work out a unit cost for 2 boxes
M1 for correct method to work out a unit cost for all 3boxes
A1 for (£)0.068 and (£)0.066 and (£)0.067 oe
C1 for correct conclusion based on their figures (consistent units) (dep on at least one M1 scored)
OR
M1 for correct method to work out the number of nails for £1oe from 2 boxes
M1 for correct method to work out the number of nails for £1oe from all 3 boxes
A1 for 14.7 and 15.1 and 14.9
C1 for correct conclusion based on their figures (consistent units) (dep on at least one M1 scored) |
| | | | | | **OR**
M1 for correct method to work out the cost of 50 nails using the 20 nails cost oe
M1 for correct method to work out the cost of 50 nails using the 20 nails cost and 90 nails using the 20 nail cost
A1 for (£1.36), (£)1.32, (£)1.34 oe
C1 for correct conclusion based on their figures (dep on at least one M1 scored) (consistent units) |

Answers to Qn 14 (AO2): 42% of students got this right

| 6. | | 3.80 × (23 + 21)
= 87.4 + 79.8 = 167.20

5.99 × (28 + 27) =
167.72 + 161.73 =
329.45

7.14 × (19 + 32) =
135.66 + 228.48 =
364.14

860.79
5.99 × (23 + 21 + 28 +
27 + 19 + 32) = 898.50 | No,
Parcel Express
is cheaper | 5 | M1 for a correct method to find cost of Parcel Express for either month or for the two months for one of the weight ranges

M1 for method to find cost of Parcels R Go for either one month or for two months

A1 for 860.79

A1 for 898.5(0)

C1 (dep on M2) for a correct conclusion from their comparable calculations; units must be included |

Answers to Qn 15 (AO1): 41% of students got this right

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.47	B1	This mark is given for the correct answer only
	$2.4 \times 9.5 \times 10^3 \times 10^5 = 22.8 \times 10^8$	M1	This mark is given for correct values which are not in standard form
	2.28×10^9	A1	This mark is given for the correct answer only

Answers to Qn 16 (AO1): 41% of students got this right

Paper 1MA1: 3F			
Question	Working	Answer	Notes
21		$4n - 7$	M1 method to deduce nth term e.g. $4n + k$ A1 for $4n - 7$ oe

Answers to Qn 17 (AO1): 40% of students got this right

Question	Working	Answer	Mark	Notes
7.		25	2	M1 for 10 ÷ 40 (= 0.25) or 10 × 100 ÷ 40
				A1 cao

Answers to Qn 18 (AO2): 40% of students got this right

Question	Working	Answer	Mark	Notes
11 (b)		Yes (supported)	B1	for Yes, with explanation, e.g. will fill 28 bags, ft from (a)

Answers to Qn 19 (AO1): 39% of students got this right

| 5 | (c) | | $2(3n-2)$ | B1 | for $2(3n-2)$ | |

Answers to Qn 20 (AO1): 38% of students got this right

Question	Working	Answer	Mark	Notes
16 (b)		66	M1	for method for calculating at least 4 values fx values correctly
			A1	cao

Answers to Qn 21 (AO1): 37% of students got this right

Paper 1MA1: 2F			
Question	Working	Answer	Notes
16 c		m^6	B1

Answers to Qn 22 (AO1): 36% of students got this right

Question	Working	Answer	Mark	Notes
8	Ath = $\dfrac{13}{45} \times 360 = 104°$ Cyc = $\dfrac{17}{45} \times 360 = 136°$ Swi = $\dfrac{8}{45} \times 360 = 64°$ Gym = $\dfrac{7}{45} \times 360 = 56°$	Correct pie chart	M1	a method shown to calculate one angle, e.g. $\dfrac{13}{45} \times 360$ **or** $\dfrac{17}{45} \times 360$ **or** $\dfrac{8}{45} \times 360$ **or** $\dfrac{7}{45} \times 360$ **or** 1 correct angle drawn out of 4 sectors
			A1	All angles drawn correctly ±2°
			B1	Sectors labelled with sport (dependent on at least 2 angles drawn correctly and exactly 4 sectors)

Answers to Qn 23 (AO3): 35% of students got this right

Paper 1MA1: 2F			
Question	Working	Answer	Notes
22		Mean of 96 or net deviation of 0 so target met	M1 for correct interpretation of the graph, with at least one correct reading or a M1 line drawn through 96 with at least one correct deviation C1 complete method to find mean of six months sales, eg. (110+84+78+94+90+120)÷6 (= 96) or the mean of six deviations, eg. (14–12–16–2–6+24)÷6 (= 0) for a correct answer of 96 or 0 with correct conclusion

Answers to Qn 24 (AO2): 34% of students got this right

Question		Working	Answer	Mark	Notes
11	(b)		Both prisms have the same volume (= 18 cm^3)	3	M1 for a method to find the volume of one of the prisms A1 for prism A = 18 and prism B = 18 C1 ft (dep on M1) for a correct comparison of their two stated volumes

Answers to Qn 25 (AO1): 34% of students got this right

			1.	5 hundredths	1	B1

Answers to Qn 26 (AO1): 33% of students got this right

		16. (a)	$c^8 k^{20}$	1	B1

Answers to Qn 27 (AO2): 33% of students got this right

14 $\dfrac{7}{20}$ of the people at a football match are men.

22% of the people at the match are women.
The rest of the people at the match are children.

Work out what percentage of the people at the match are children.

$\dfrac{7}{20} \times 100 = 35\%$

Children % = 100 – 35 – 22

43%