AQA

GCSE
APPLICATIONS OF MATHEMATICS (LINKED PAIR)

F

Foundation Tier   Unit 1   Finance and Statistics

Friday 4 November 2016   Morning   Time allowed: 1 hour 30 minutes

Materials
For this paper you must have:
- a calculator
- mathematical instruments.

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80
- The quality of your written communication is specifically assessed in Questions 10 and 12
  These questions are indicated with an asterisk (*).
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

Advice
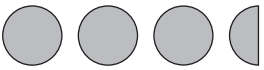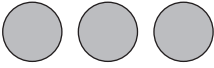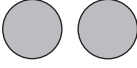- In all calculations, show clearly how you work out your answer.

Answer **all** questions in the spaces provided.

1   Two classes of students were asked to choose their favourite colour.

1 (a)   The pictogram shows the results for Class A.

Key ⬤ represents 2 students

Red	⬤ ⬤ ⬤ ◗
Blue	⬤ ⬤ ⬤
Green	⬤ ⬤
Yellow	⬤ ◗
Purple	⬤
Orange	◗

How many students chose orange?

[1 mark]

Answer _____

1 (b) This list shows the results for Class B.

Blue	Red	Blue	Yellow	Green
Red	Purple	Red	Red	Blue
Red	Yellow	Green	Blue	Yellow
Green	Blue	Green	Purple	Blue

Complete this table for Class B.

[2 marks]

Colour	Tally	Frequency
Red		
Blue		
Green		
Yellow		
Purple		

1 (c) Work out the **total** number of students from both classes who chose red.

[2 marks]

_____

_____

Answer _____

5

Turn over ▶

2   A shop sells these toys.
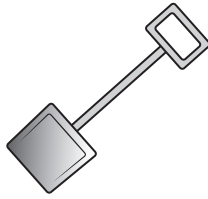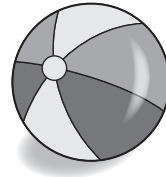
Bucket	Spade	Ball
£1.75	£1.35	£1.50

Lisa buys one bucket and two spades.
She pays with a £10 note.

How much change should she get?

[3 marks]

_____

_____

_____

Answer £ _____

3 (a)   Pavel buys a bar of chocolate for 75p
He pays the exact amount using **five** coins.

Write down **one** possible list of coins he could have used.

[2 marks]

_____

_____

_____

Answer _____

3 (b)   Pavel divides the chocolate into 12 pieces.

He eats $\frac{1}{2}$ of the 12 pieces.

He gives $\frac{1}{3}$ of the 12 pieces to his friend.

How many pieces does he have left?

[3 marks]

_____

_____

_____

_____

Answer _____

Turn over ▶

4 Vikki has a bag of 8 marbles.

There are,

4 red marbles

3 blue marbles

and 1 white marble.

Vikki takes a marble at random from the bag.

4 (a) Circle the chance that the marble is white.

[1 mark]

impossible   unlikely   evens   likely   certain

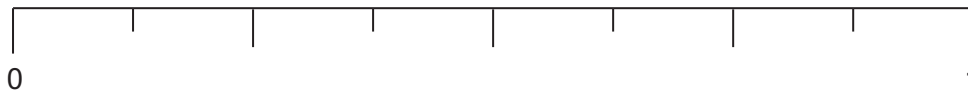**4 (b)** A probability scale is shown below.

Draw an arrow on the scale to show the probability of the marble **not** being blue.

[1 mark]

0   1

4 (c) Vikki has all 8 marbles in her bag.
She now takes out 2 of the marbles.

List the possible pairs of colours of the two marbles.

[2 marks]

5 Neil repairs computers.
He charges for jobs using this rule.

Charge = £15   plus   £10 for each $\frac{1}{2}$ hour the job takes

5 (a) A job takes 3 hours.

How much does Neil charge?

[2 marks]

Answer £ _____

5 (b) Neil charges £125 for a job.

Work out the number of hours the job takes.

[3 marks]

Answer _____ hours

Turn over for the next question

Turn over ▶

6 Members of a film club meet once a week.
The bar chart shows some information for November.
The information for week 4 is missing.
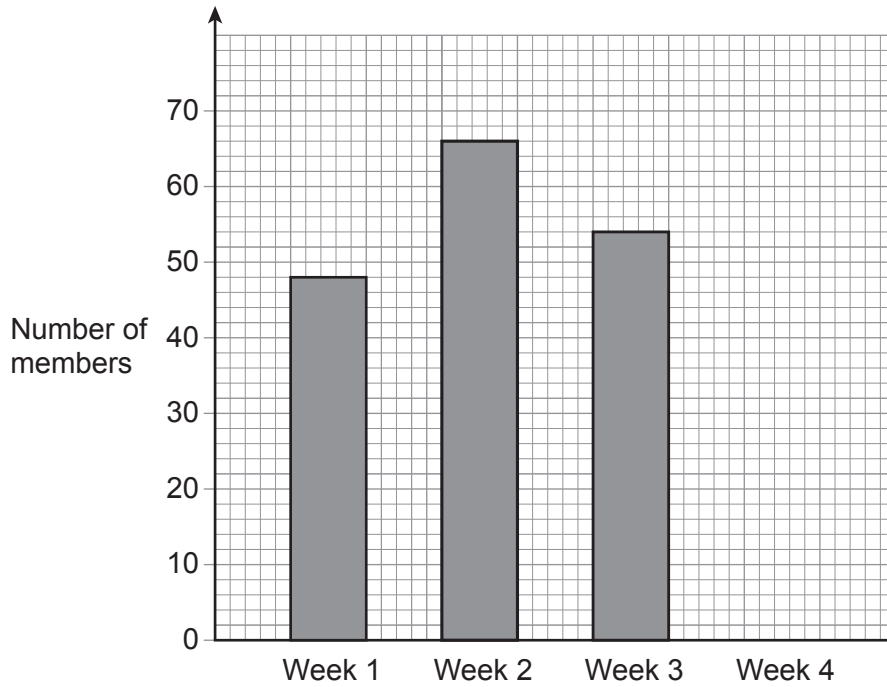
6 (a) How many members were at the club in week 3?

[1 mark]

Answer _____

6 (b) How many **more** members were at the club in week 2 than in week 1?

[1 mark]

Answer _____

6 (c) The film club has 90 members.
40% of the members went to the film club in week 4

Complete the bar chart for week 4
Show your working below.

[3 marks]

_____

_____

_____

Turn over for the next question

5

7 Each week, Isobel has a spelling test at school.
Here are her marks for the last ten weeks.

19   16   14   17   19   18   13   20   18   20

7 (a) Work out her mean mark.

[3 marks]

_____

_____

_____

Answer _____

7 (b) Work out the range of her marks.

[1 mark]

_____

Answer _____

Josh takes the same ten spelling tests.
Here is some information about his marks.

Mean	15.2
Range	4

7 (c) Who, on average, did better in the tests?
Give a reason for your answer.

[1 mark]

_____

_____

_____

7 (d) Who was more consistent in the tests?
Give a reason for your answer.

[1 mark]

_____

_____

_____

Turn over for the next question

6

Turn over ▶

8 Party bags have packs of sweets inside.
A party bag with,

6 packs costs £1.40

10 packs costs £1.90

12 packs costs £2.50

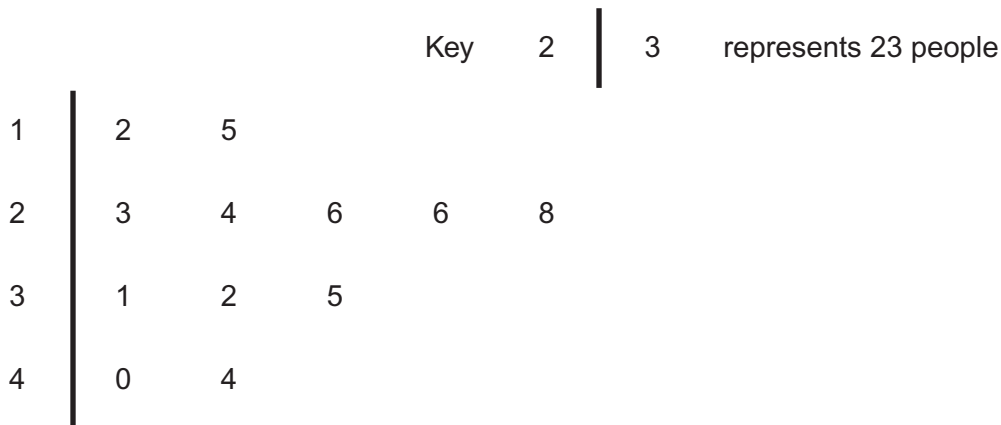What is the cheapest way to buy **exactly** 36 packs?
You **must** show your working.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

Cheapest way _____

Cheapest cost £ _____

9 The stem-and-leaf diagram shows the weekly attendance at a music group for 12 weeks.

Key 2 | 3 represents 23 people

```
1 | 2  5
2 | 3  4  6  6  8
3 | 1  2  5
4 | 0  4
```

9 (a) What fraction of the 12 weeks had an attendance of more than 25 people?

[2 marks]

Answer _____

9 (b) Work out the median attendance for the 12 weeks.

[2 marks]

Answer _____

9 (c) In week 13 there are 29 people at the music group.
This value is added to the stem-and-leaf diagram.

What happens to the median?
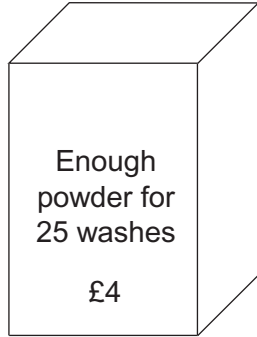Tick one box.

[1 mark]

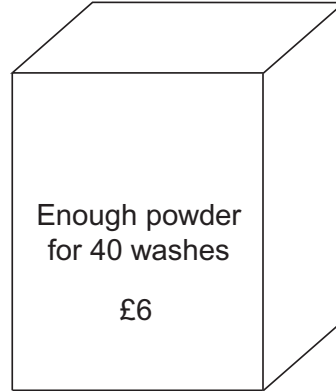decreases   stays the same   increases

☐   ☐   ☐

Turn over ▶

8

*10   A supermarket sells boxes of washing powder in two sizes.

Small

Large

Enough
powder for
25 washes

£4

Enough powder
for 40 washes

£6

Which size is better value?
You **must** show your working.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

11 A theatre puts on a play for two nights.
The pie chart represents the number of men, women and children who go on **Friday**.

men

children

210°
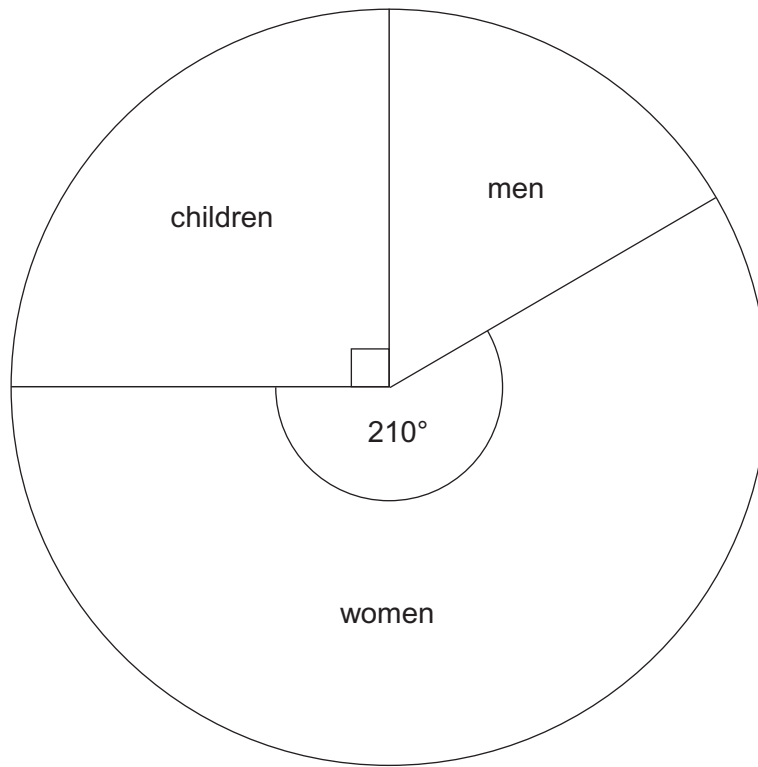
women

11 (a) What fraction are children?
Give your answer in its simplest form.

[1 mark]

Answer _____

11 (b) On Friday, 300 people go to the play.
On Saturday, 112 **women** go to the play.

How many **more** women go on Friday than on Saturday?

[3 marks]

_____

_____

_____

Answer _____

7

12 The spreadsheet shows some information about the fruit sold in a shop one week.

	A	B	C	D
1	**Fruit**	**Price per kg**	**Number of kg sold**	**Income**
2	Grapes	£2.36	18.5	
3	Bananas	£1.77	26	
4	Strawberries	£4.80	34	
5				

12 (a) Work out the value in cell D2
Circle your answer.

[1 mark]

£8.93 £20.86 £43.66 £46.02

12 (b) Write a formula for cell D3

[1 mark]

Answer _____

*12 (c) Cell D5 is used for the total income.

Write a formula for cell D5

[2 marks]

_____

Answer _____

13 On a UK website a digital map costs £255
On a French website the same map costs 272 euros.

Molly will use a credit card to buy the map.
Her credit card company makes a 3% commission charge on purchases in **euros**.

The exchange rate is   £1 = 1.36 euros

How much will Molly save if she uses the French website?
Give your answer in pounds.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

Answer £ _____

Turn over for the next question

8

Turn over ▶

14 Sita has some DVDs.

$\frac{1}{4}$ of her DVDs are comedies.

60% of her DVDs are adventure films.
The other 9 DVDs are travel guides.

How many DVDs does Sita have altogether?
You **must** show your working.

[3 marks]

_____

_____

_____

_____

_____

Answer _____

15 Here is an advert for tables from **Tables-4-Now**.

> **Tables-4-Now**
>
> Tables £85 each
>
> +
>
> Delivery £35
> (for any number of tables)

15 (a) Write an expression, in £, for the total cost of buying n tables and having them delivered.

[2 marks]

_____

Answer _____

15 (b) Here is an advert for tables from **Tables Today**.

> **Tables Today**
>
> Tables £87.50 each
>
> +
>
> Delivery £15
> (for any number of tables)

James wants to buy some tables and have them delivered to his café.
He finds the total cost is the same from both companies.

How many tables does he want to buy?
You **must** show your working.

[3 marks]

_____

_____

_____

_____

_____

Answer _____

8

16   Javed's gross salary is £1650 per **month**.

His tax allowance is £10 600 per **year**.
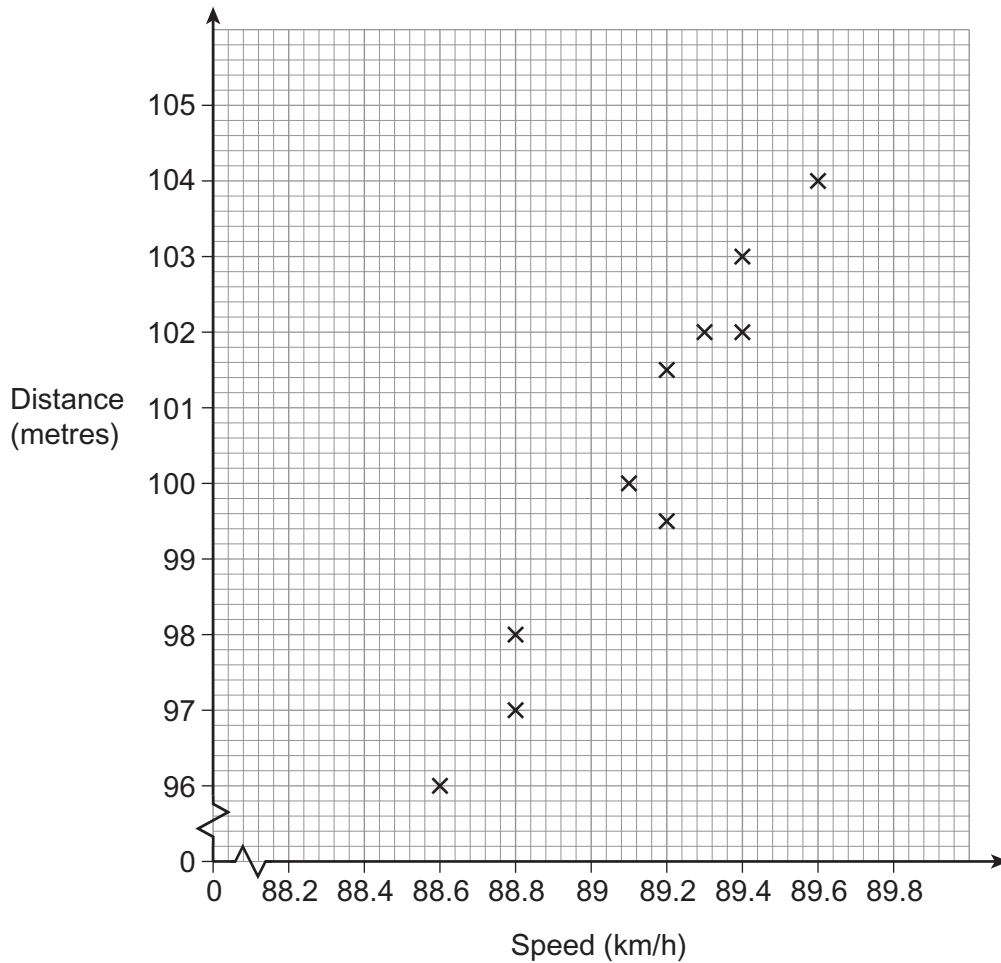He pays tax at 20% of his taxable income.

How much tax does Javed pay in a **year**?

[3 marks]

Answer £ _____

17 The scatter diagram shows the take-off speed, in km/h, and the distance jumped, in metres, for ten ski jumpers in a competition.

17 (a) The scatter diagram shows positive correlation.

What does this tell you about the relationship between distance jumped and take-off speed?

[1 mark]

_____

_____

17 (b) Use a line of best fit to estimate the distance jumped for a take-off speed of 89 km/h

[2 marks]

Answer _____ metres

18 Phil makes a display using purple flowers, yellow flowers and blue flowers.

the purple flowers and yellow flowers are in the ratio 2 : 5
and
the purple flowers and blue flowers are in the ratio 3 : 4

He uses the smallest possible number of flowers for this display.

How many flowers does he use?

[3 marks]

Answer _____

19 Ralph thinks that an ordinary six-sided dice is biased towards the number 6

Describe an experiment that Ralph could do to check if the dice is biased.
Remember to write about,

how the experiment is done

how the results could be used.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Turn over for the next question

7

Turn over ▶

20   Clare is doing a survey about how much television children watch.

20 (a)   One of the questions she asks is,

> Don't you agree that children watch too much television?
>
> Circle your answer.
>
> Yes   No   Don't know

Write down **one** criticism of this question.

[1 mark]

_____

_____

_____

20 (b)   Write a suitable question to find out how much television children watch.
Include a response section.

[2 marks]

END OF QUESTIONS

3