For Examiner's Use

General Certificate of Secondary Education
November 2009

AQA

MATHEMATICS (SPECIFICATION A)   **4306/1F**
Foundation Tier
Paper 1 Non-calculator

F

Thursday 5 November 2009   9.00 am to 10.30 am

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.

Time allowed: 1 hour 30 minutes

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book.

Information
- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.
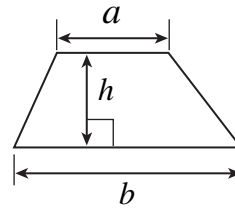
Advice
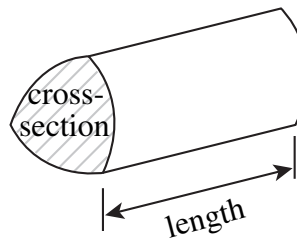- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a+b)h$

Volume of prism = area of cross-section × length

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

1 Picture frames cost £2.65 each.

1 (a) What is the cost of two picture frames?

....

....

Answer £ .... *(1 mark)*

1 (b) Tom buys two picture frames and pays with a £10 note.

How much change should he get?

....

....

Answer £ .... *(1 mark)*

2 Jill buys some potatoes.
The scales show the amount she buys.
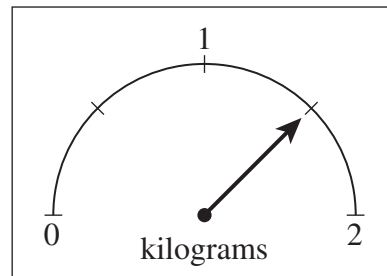
2 (a) What amount of potatoes does she buy?

2 (a) (i) Give your answer in kilograms.

Answer .... kg *(1 mark)*

2 (a) (ii) Give your answer in grams.

Answer .... g *(1 mark)*

2 (b) Explain how Jill can use the scales to weigh out 5 kilograms of flour.

....

....

....

(1 mark)

5

Turn over ▶

3 Triangle *ABC* is drawn below.

A

B   C
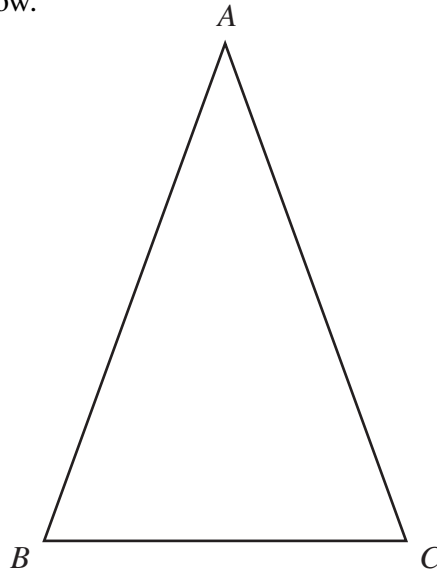
3 (a) Measure the length of *AB*.

Answer .... cm   *(1 mark)*

3 (b) Measure the size of angle *B*.

Answer .... degrees   *(1 mark)*

3 (c) Measure another angle or side to show that triangle *ABC* is isosceles.
Give a reason for your answer.

....

....
          (1 mark)

4 (a) Complete the following.

4 (a) (i) $\dfrac{5}{6} = \dfrac{\boxed{}}{18}$ *(1mark)*

4 (a) (ii) $\dfrac{6}{5} = \dfrac{30}{\boxed{}}$ *(1mark)*

4 (b) Circle the **two** fractions that are **not** equivalent to $\dfrac{2}{3}$

$\dfrac{4}{6}$ $\dfrac{5}{8}$ $\dfrac{8}{12}$ $\dfrac{10}{15}$ $\dfrac{12}{16}$

          (2 marks)

5 An oval shape is drawn on a centimetre square grid.
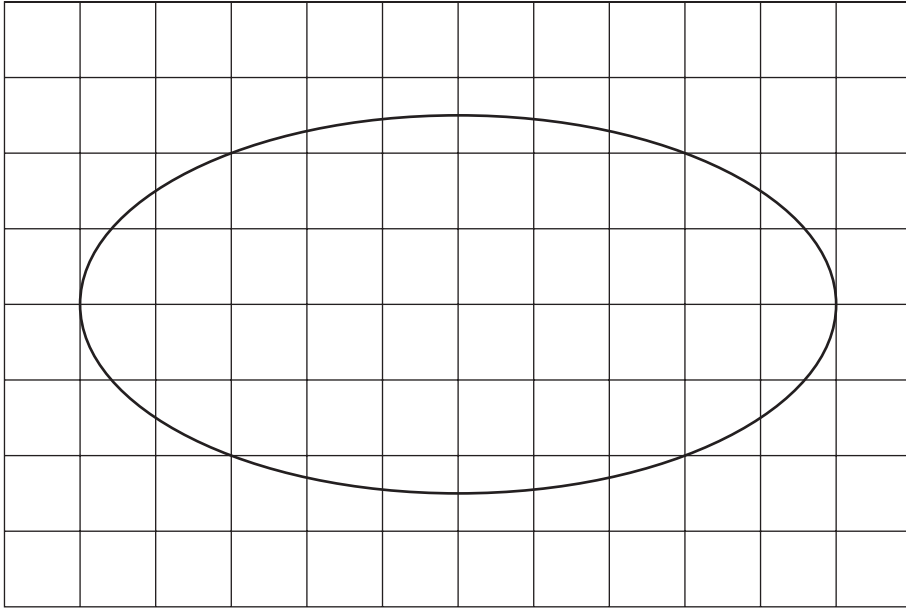
Estimate the area of the oval shape.

....

....

....

....

Answer .... cm^2 *(2 marks)*

Turn over for the next question

9

6 Here is a method to divide numbers by four.

$$\boxed{\text{starting number}}$$

$$\downarrow$$

$$\boxed{\text{halve it}}$$

$$\downarrow$$

$$\boxed{\text{halve it again}}$$

$$\downarrow$$
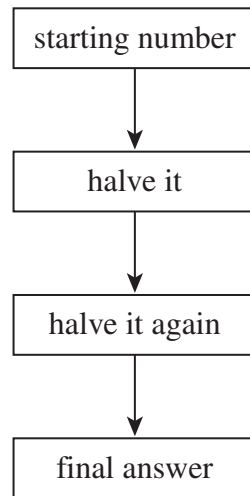
$$\boxed{\text{final answer}}$$

6 (a) (i) Dave has a starting number of 18

What is his final answer?

....

Answer ....   *(1 mark)*

6 (a) (ii) Dave has a final answer of $11\frac{1}{4}$

What is his starting number?

....

Answer ....   *(1 mark)*

6 (b) (i) Sue has a starting number of 20

What is her final answer?

Answer ....   *(1 mark)*

6 (b) (ii) Find a different starting number that gives a final answer that is a whole number.

....

Answer ....   *(1 mark)*

6   **(c)**   Only **one** of the following statements is **always** true for the flow chart.

Tick the statement that is always true.

When the final answer is a whole number, the starting number is odd.   ☐

When the final answer is a whole number, the starting number ends in 0   ☐

When the final answer is a whole number, the starting number is a multiple of 4   ☐

(1 mark)

7   Here are some number cards.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
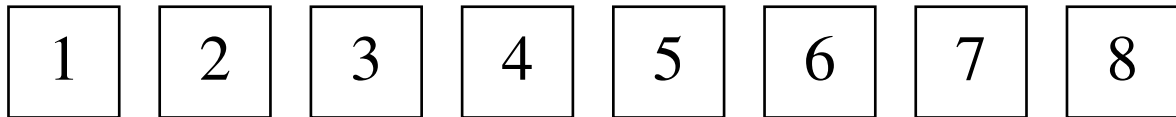
A card is chosen at random.

Match each statement to the correct position on the probability scale.
The first one has been done for you.

| The card chosen is an odd number. | The card chosen is less than ten. | The card chosen is greater than two. | The card chosen is a multiple of three. |

impossible   unlikely   evens   likely   certain

(3 marks)

Turn over ▶

8
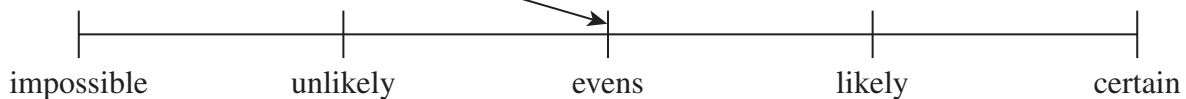
8   Here is a rule to convert kilometres to miles.

> Divide the number of kilometres by 8,
>
> then multiply the answer by 5

8   (a)   Use the rule to convert 24 kilometres into miles.

....

....

Answer .... miles   *(2 marks)*

8   (b)   The sign shows the speed limit, in kilometres per hour, in a German town.

50
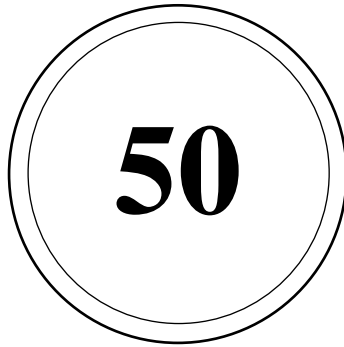
Martin says that this speed is approximately 30 miles per hour.

Show that Martin is correct.

....

....

....

(2 marks)

8   (c)   Mel works out a rule to convert miles to kilometres.

Fill in the blanks in Mel's rule.

> Divide the number of miles by .... ,
>
> then multiply the answer by ....

(1 mark)

*Areas outside
the box will
not be scanned
for marking*

9 The pie chart shows how a council spends money on transport.
Only some of the percentages are given.
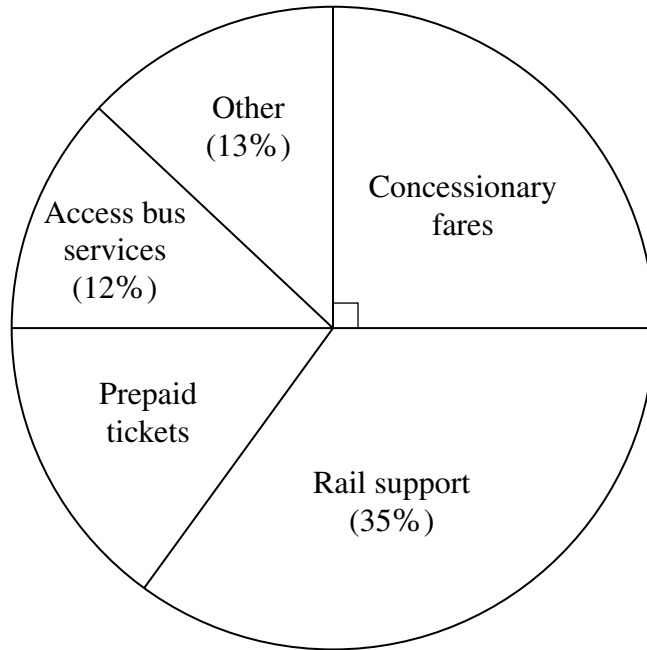
9 (a) 25% of the money is spent on Concessionary fares.

Explain how the pie chart shows this.

....

....
(1 mark)

9 (b) What percentage of the money is spent on Prepaid tickets?

....

....

Answer .... % *(2 marks)*

9 (c) The council spends £200 million on transport in total.

Work out 12% of £200 million to find how much the council spends on Access bus
services.

....

....

....

....

Answer £ .... million *(2 marks)*

Turn over ▶

10

10 Draw arrows to match the properties of four different quadrilaterals.
The first one has been done for you.

- Only one pair of parallel sides

- Four right angles
- The sides are not all the same length

- All sides are the same length
- No right angles

- Opposite angles are equal
- No right angles
- The sides are not all the same length

square

rectangle

parallelogram

rhombus

kite

trapezium

(3 marks)

11 The data shows the number of people in 10 cars as they travel to work.

1   3   4   1   1   3   1   3   1   2

11 (a) Work out the range.

....

Answer .... *(1 mark)*

11 (b) Work out the mean.

....

....

....

Answer .... *(3 marks)*

12 Work out

12 (a) 287 + 76 + 172

....

....

....

....

Answer .... *(2 marks)*

12 (b) 624 − 391

....

....

....

Answer .... *(2 marks)*

12 (c) 17 + 5 × 3

....

....

Answer .... *(2 marks)*

12 (d) 6 × 0.2

....

....

Answer .... *(1 mark)*

12 (e) 324 × 41

....

....

....

....

....

Answer .... *(3 marks)*

17

Turn over ▶

*Areas outside
the box will
not be scanned
for marking*

13 (a) Simplify $2x + 4x + 3x$

....

Answer .... *(1 mark)*

13 (b) Simplify $4x + 5y + 2x - y$

....

....

Answer .... *(2 marks)*

13 (c) Work out the value of $\dfrac{a(3b + 1)}{5}$ when $a = -2$ and $b = 3$

....

....

....

Answer .... *(3 marks)*

14 The diagram shows a cuboid.
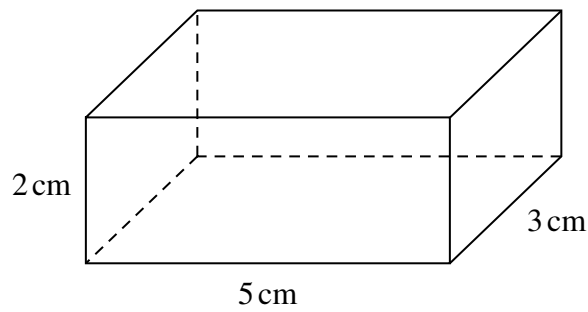
14 (a) Work out the volume of the cuboid.

....

....

Answer .... cm^3 *(2 marks)*

14 **(b)** On the centimetre grid complete a net of the cuboid.
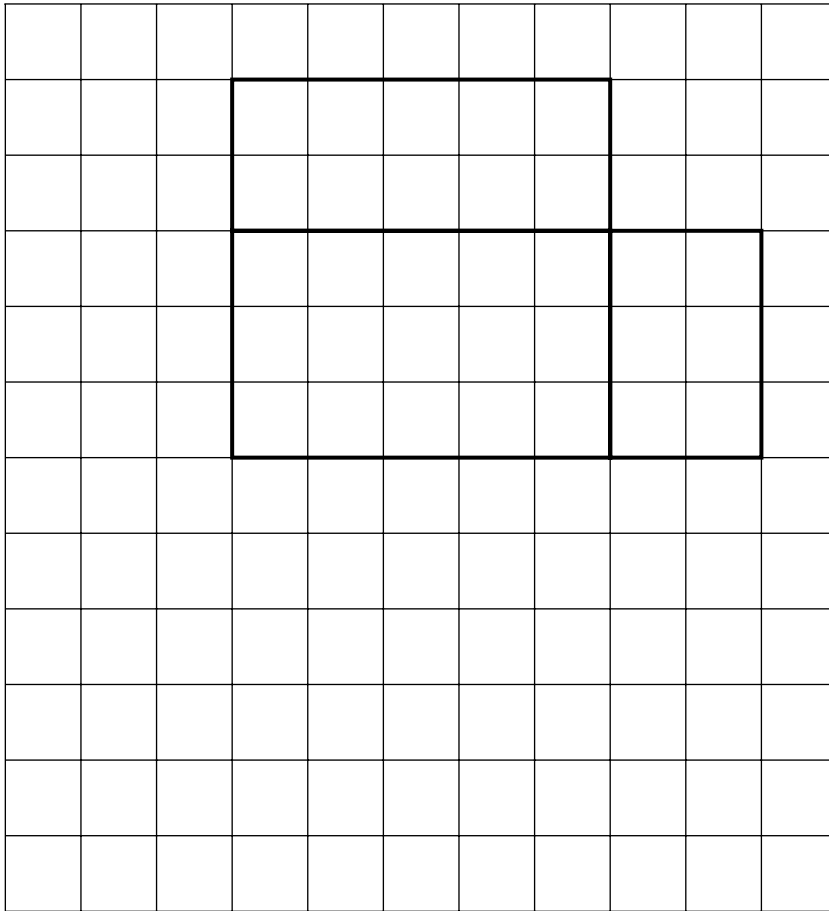
(3 marks)

14 **(c)** Work out the total surface area of the cuboid.
State the units of your answer.

....

....

....

....

Answer .... *(4 marks)*

15

Turn over ▶

15 (a) Members of a Fitness Club were asked at what time of day they usually went to the gym. The two-way table shows some of the results.

Time of day	Males	Females	Total
Morning	19		67
Afternoon/Evening			
Total		65	160

Fill in **all** the missing values in the table.

....

....

....

(3 marks)

15 (b) The manager of the Fitness Club wants to find out for how long each day members use the treadmill.

Write a suitable question with a response section that will enable him to find out this information.

Question ....

....

....

Response section ....

....

....

(2 marks)

16 In a school, there are 200 students in Year 11.

$\frac{3}{4}$ of these students travel to school by bus.

$\frac{1}{5}$ walk to school.

The rest go to school in other ways.

16 (a) How many of these students go to school in other ways?

....

....

....

Answer .... *(4 marks)*

16 (b) 110 of these students are girls.

What percentage of the students are girls?

....

....

Answer .... % *(2 marks)*

17 Show that $\sqrt{72}$ is between 8 and 9

....

....

....

....

(2 marks)

13

Turn over ▶

18 Here is a recipe for Bolognese sauce,

minced beef .... 400 g

chopped tomatoes .... 600 g

mushrooms .... 20 g

chicken stock .... 120 m*l*

Ann has only 300 g of minced beef.

How much of the other ingredients should she use?

....

....

....

....

Answer chopped tomatoes .... g

mushrooms   .... g

chicken stock   .... m*l*   *(3 marks)*

19 (a) The cost of a newspaper is *x* pence.
The cost of a magazine is £1.25 more than the newspaper.
The cost of three of these magazines is the same as the cost of eight of these newspapers.

Show **clearly** that $3x + 375 = 8x$

....

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....

....
(2 marks)

19 (b) Solve $3x + 375 = 8x$

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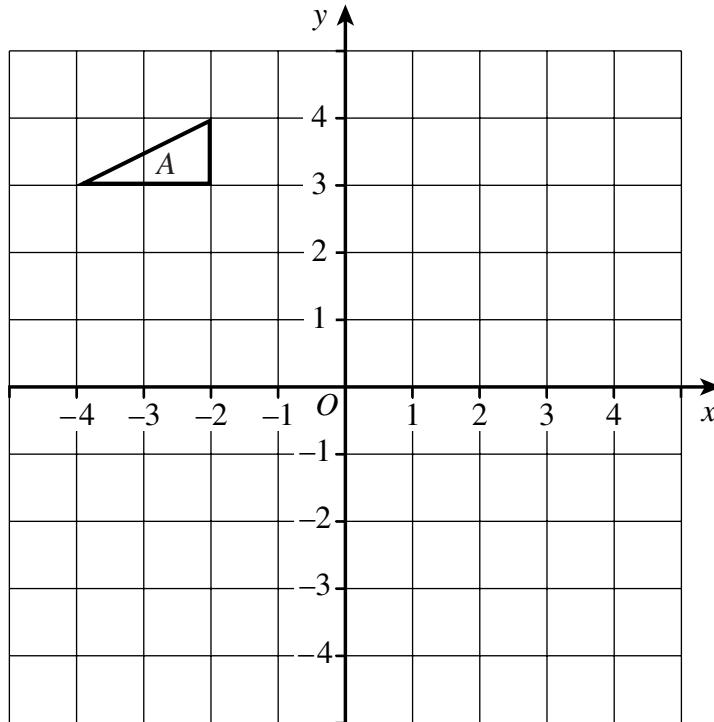Answer *x* = ...   *(2 marks)*

20 The diagram shows a triangle *A*, with vertices at (– 4, 3), (–2, 3) and (–2, 4).

20 (a) Draw the image of triangle *A* when it is reflected in the line *y* = 1
Label your image *B*.

(2 marks)

20 (b) Draw the image of triangle *A* when it is rotated 90° clockwise about the origin.
Label your image *C*.

(3 marks)

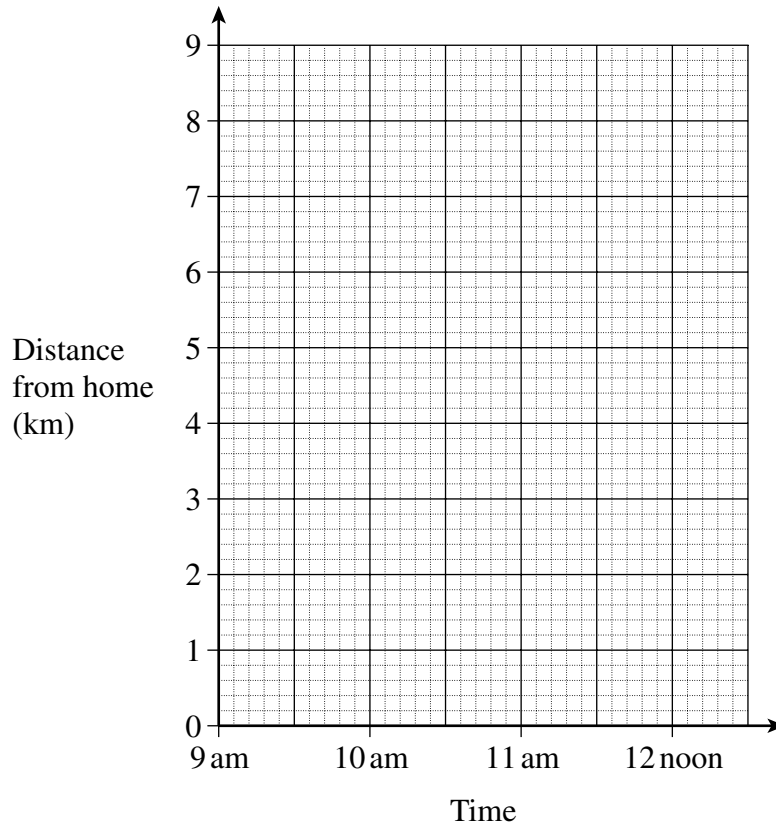**21** Use approximations to estimate the value of $\dfrac{397.8 \times 3.06}{0.524}$

....

....

....

....

Answer .... *(3 marks)*

15

Turn over ▶

22 Simon leaves home at 9 am and goes for a walk.
He walks at a steady speed of 5 kilometres per hour for 90 minutes.
He stops for 30 minutes.
He then walks back home and arrives at 12 noon.

22 (a) On the grid draw a distance-time graph to show Simon's journey.

Distance from home (km)

Time

(3 marks)

22 (b) What is Simon's average speed on the return part of his walk?

....

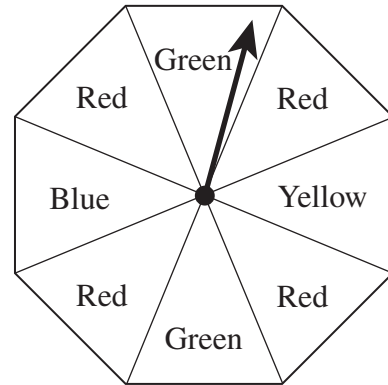Answer .... km/h   *(1 mark)*

23 (a) Oscar has a spinner with eight sections.
Four of the sections are Red, two are Green, one is Blue and one is Yellow.
He spins the spinner 200 times.
His results are shown in the table.

Colour	Red	Green	Blue	Yellow
Frequency	105	48	22	25

23 (a) (i) Explain why the relative frequency of Green is 0.24

....

....
(1 mark)

23 (a) (ii) Do the results suggest that the spinner is fair?
Explain your answer.

....

....

....
(2 marks)

23 (b) Matilda has a spinner with six sections.
Three of the sections are Pink, two are White and one is Black.
She spins the spinner 10 times.
Her results are shown in a table.

Colour	Pink	White	Black
Frequency	2	5	3

She says her spinner is **not** fair.

Explain why Matilda could be wrong.

....

....

....
(1 mark)

END OF QUESTIONS

8

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED