MINISTRY OF EDUCATION

FIJI YEAR 9 FINAL EXAMINATION 2016

MATHEMATICS

Time Allowed: 2 hours
(An extra 10 minutes is allowed for reading this paper.)

INSTRUCTIONS

1. Write all your answers in the **Answer Booklet** provided.
2. Write your **NAME** and **YEAR LEVEL** on the front page of the **Answer Booklet**.
3. If you use extra sheets of paper, be sure to show clearly the question number(s) being answered and to staple each sheet securely in your **Answer Booklet** at the appropriate place.
4. Answer **all** the questions with a blue **or** black ballpoint or ink pen. Do **not** use red ink. Use a pencil **only** for drawing.
5. Round off answers to 2 decimal places unless otherwise stated.
6. There are **three** sections in this paper. **All sections A, B and C are compulsory.**

Note:
- Calculators can be used, provided they are silent, battery-operated and non-programmable.
- Diagrams in this paper are not drawn to scale.

SUMMARY OF QUESTIONS

Section	Guidelines	Total Mark	Suggested Time
A	There are **thirty** multiple-choice questions. **All questions are compulsory.**	30	36 minutes
B	There are **twenty** questions. **All questions are compulsory.**	40	48 minutes
C	There are **ten** questions. **All questions are compulsory.**	30	36 minutes
	TOTAL	**100**	**120 minutes**

SECTION A MULTIPLE-CHOICE QUESTION [30 marks]

Answer all the questions. Each question is worth 1 mark.

INSTRUCTIONS

The following shows how to answer **multiple-choice** questions in Section A.

(a) In your **Answer Booklet**, **circle** the letter of the **best** answer. **If you change your mind**, put a line through your first circle and draw a circle around the letter of your next choice.

For example:

12	A	B	C	D

(b) **If you change your mind** again and like your first answer better, put a line through your second circle and tick (✓) your first answer.

For example:

12	A	B ✓	C	D

(c) **No mark** will be given if you circle more than one letter as the answer for a question.

1. Which of the following is a whole number?

A. 5

B. $\sqrt{5}$

C. -5

D. $\frac{1}{5}$

2. Which of the following mathematical statements is true?

A. $\sqrt{2}$ is a rational number

B. $\sqrt{2}$ is an irrational number

C. $\sqrt{2}$ is an integer

D. $\sqrt{2}$ is a natural number

3. The value of $(-4)^2$ is

A. 16 B. 8

C. -8 D. -16

4. In evaluating $2^4 - 9 \times (8 - 12)$, which one is calculated first?

A. 2^4 B. $2 - 9$

C. 9×8 D. $(8 - 12)$

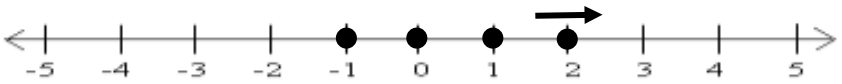
5. The value of $|-3| + |-2|$ is

A. -5 B. -1

C. 1 D. 5

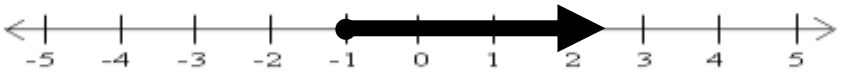
6. Which of the graphs below best represent the set of integers $\{-1, 0, 1, 2, \ldots\}$?

A.

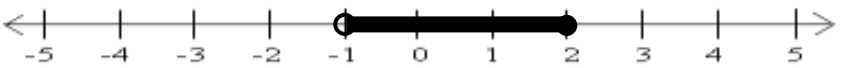


B.

C.



D.



7. The value of $(3 + 3^2 \div 3)^2 + 2$ is

A. 6 B. 12

C. 18 D. 38

8. On a number line, which of the following numbers can be found on the right of 1.24 ?

A. 0.24 B. 1.42

C. – 1.24 D. – 1.42

9. In a class at Tuvu District School, there are 16 students. $\frac{1}{4}$ of this class are girls. How many girls are there?

A. $\frac{1}{4}$ B. $\frac{3}{4}$

C. 4 D. 12

10. Four times a number, x, is subtracted from 12. The result is 9. The correct mathematical equation for the above is given by

A. $4x - 12 = 9$ B. $12 - 4x = 9$

C. $4(x - 12) = 9$ D. $9 - 4x = 12$

11. When simplified, $2x \times 3xy$ is equal to

A. $5xy$ B. $6xy$

C. $5x^2y$ D. $6x^2y$

12. One of the factors of $3x^2 + 6x$ is

A. $x + 2$ B. $x + 6$

C. $3x + 2$ D. $3x^2 + 6$

13. When simplified, $4x^2 + x^2 - 3x + 5$ is equal to

A. $7x^2$ B. $2x^2 - 3x$

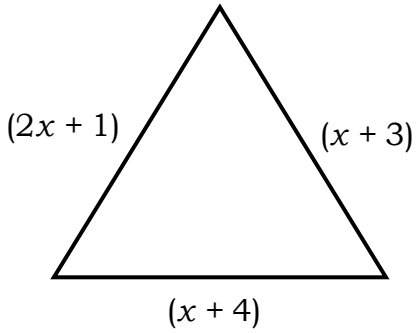
C. $5x^2 - 3x + 5$ D. $5x^4 - 3x + 5$

14. Which of the following is a trinomial?

A. $4xyz$ B. $4xyz + 3uvw$

C. $4xyz + 3uvw + rst$ D. $4xyz + 3uvw + rst + pq$

15. The perimeter of the rectangle given below is



A. $2x + 8$ B. $4x + 8$

C. $2x^3 + 8$ D. $4x^3 + 8$

16. When fully simplified, $\frac{6xy}{3yz}$ is equal to

A. $\frac{2xy}{yz}$ B. $\frac{3xy}{yz}$

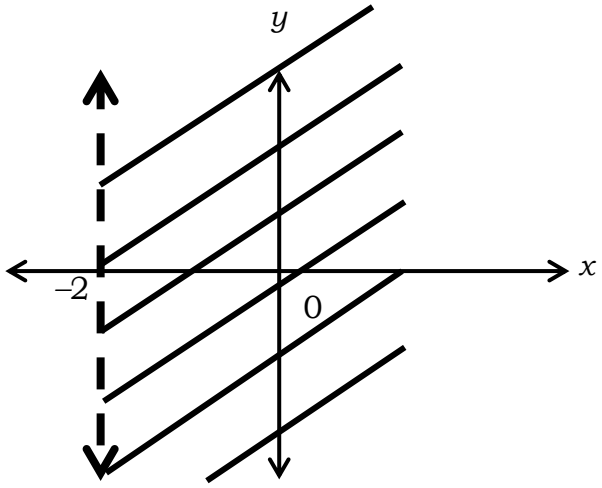
C. $\frac{2x}{z}$ D. $\frac{3x}{z}$

17. Like term as $4pq^2r$ is

A. $-5pq^2r$ B. $-5p^2qr$

C. $-5pqr^2$ D. $(-5pqr)^2$

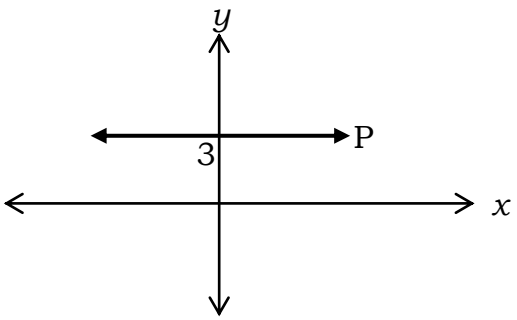
18. Which inequation is represented by the graph shown below?



A. $x \geq -2$ B. $x > -2$

C. $x \leq -2$ D. $x < -2$

19. What is the equation of the horizontal line P drawn below?



A. $y = 3$ B. $x = 3$

C. $y < 3$ D. $x < 3$

20. Which of the following equation represents a line which is parallel to the y axis?

A. $y > 4$ B. $y = 4$

C. $x > 4$ D. $x = 4$

21. When expressed as decimals, 834% is equal to

A. 8340.00 B. 834.00

C. 83.40 D. 8.34

22. An employee of a factory receives $3.50 in an hour. He works for 7 hours on Monday.

How much should he receive for Monday's pay?

A. $3.50 B. $10.50

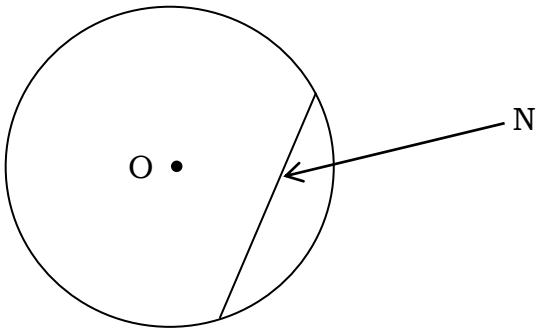
C. $24.50 D. $122.50

23. $\frac{1}{4}$ of 1 litre is equal to

A. 250 ml B. 500 ml

C. 750 ml D. 1000 ml

24. A circle is drawn below.



The line labelled N is called the

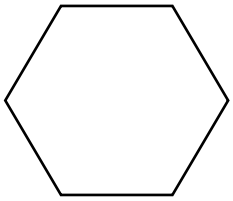
A. radius. B. diameter.

C. chord. D. arc.

25. Which of the following pairs of angles are supplementary?

A. {40°, 40°}
B. {40°, 50°}
C. {40°, 140°}
D. {40°, 230°}

26. A hexagon is given below.



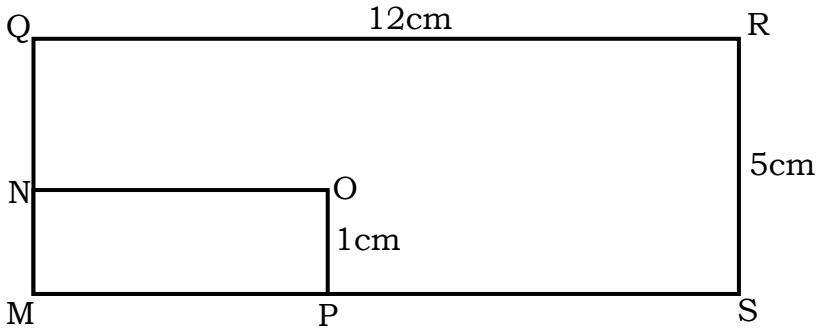
The sum of the exterior angles of a hexagon is

A. 360°
B. 540°
C. 720°
D. 900°

27. Which of the following will change under translation?

A. Size
B. Shape
C. Position
D. Orientation

28. In the diagram given below, rectangle MNOP is enlarged to rectangle MQRS.



The center of enlargement is

A. M
B. N
C. O
D. P

29. Rotation is a transformation which turns an object around a point.

This point is known as the

A. centre of rotation.
B. mirror line.
C. axis of symmetry.
D. angle of rotation.

30. Which of the following will change under reflection?

A. Size
B. Shape
C. Corresponding angles
D. Orientation

SECTION B SHORT ANSWER QUESTIONS [40 marks]

Answer **all** the questions in your Answer Booklet. Each question is worth **2 marks**. **Show all working.**

1. (a) A boy standing on the ground throws a ball, which rises 20 metres above the ground. When the ball was coming down, another boy caught that ball at a height of 5 metres above the ground.

   Calculate the total distance that has been covered by the ball. **(1 mark)**

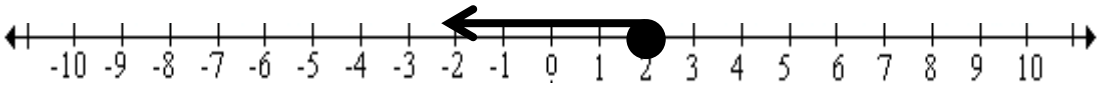
   (b) Simplify $(-3a) \times (-2ab)$ **(1 mark)**

2. (a) Simplify $-(4n^3)^2$ **(1 mark)**

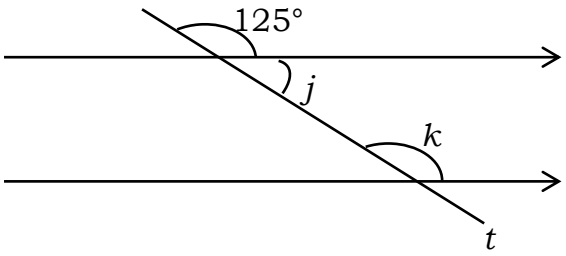
   (b) Simplify $\frac{2x}{3} - 1 + \frac{x}{3} - 4$ **(1 mark)**

3. (a) Express 80% as a fraction in its simplest form. **(1 mark)**

   (b) Write a set builder notation that describes the numbers which are represented in the number line below. **(1 mark)**



4. Two parallel lines are drawn below. They are intersected by a straight line, t.



   (a) Angles j and k are called _____ angles. **(1 mark)**

   (b) What is the size of the angle marked k.? **(1 mark)**

5. (a) Solve the equation $\frac{x}{3} + 7 = -8$ **(1 mark)**

(b) Represent $\{x > -5, x \in \mathrm{R}\}$ on the number line provided in the Answer Booklet. **(1 mark)**

6. (a) What is $\frac{3}{4}$ of 180? **(1 mark)**

(b) Write $\frac{2}{5}$ as a decimal. **(1 mark)**

7. A house was sold at a profit of 40%. The original cost of the house was \$30,000.00.

(a) Find 40% of \$30, 000.00. **(1 mark)**

(b) Calculate the selling price of the house. **(1 mark)**

8. (a) Year 9A and Year 9B shared a prize money of \$400.00 in the ratio 4:1.

How much money should be received by Year 9A? **(1 mark)**

(b) In a class of 30 students, there are 14 girls and 16 boys.

Write the ratio of girls to boys in its simplest form. **(1 mark)**

9. (a) Eroni bought 4 kg of flour for \$3.50.

What would be the cost for 6 kg of flour? **(1 mark)**

(b) In a Mathematics test, Shalini scored 45 out of 80 marks.

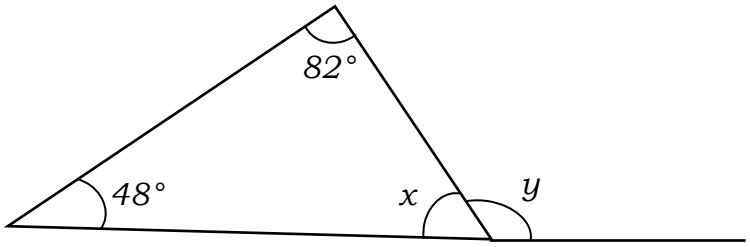
Express this as a percentage. **(1 mark)**

SECTION B (continued)

10. In the **Answer Booklet**, draw the graph of the inequality

$\{(x, y): -2 < y \leq 3\}$ **(2 marks)**

11. Study the diagram given below.



Find the value of the angles marked:

(i) x

(ii) y **(2 marks)**

12. (a) Simplify $\frac{3x}{4} + \frac{x}{2}$ **(1 mark)**

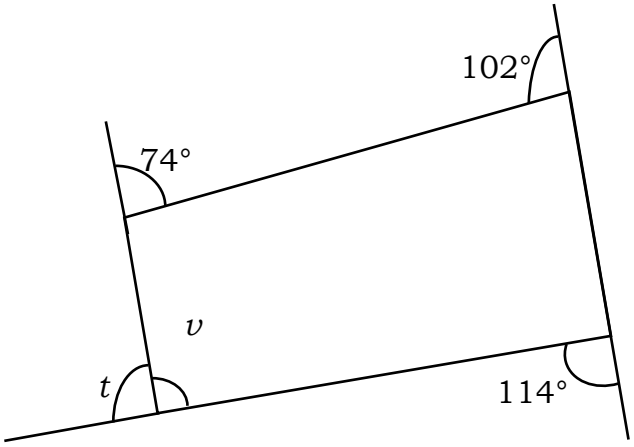
(b) Identify two integers from the list $\{0.3, -6, -0.2, \frac{1}{8}, 0, -\frac{3}{5}\}$ **(1 mark)**

13. If $x = 2$, $y = 0.3$, $z = -\frac{1}{2}$, evaluate the following:

(a) $2y + x^2$ **(1 mark)**

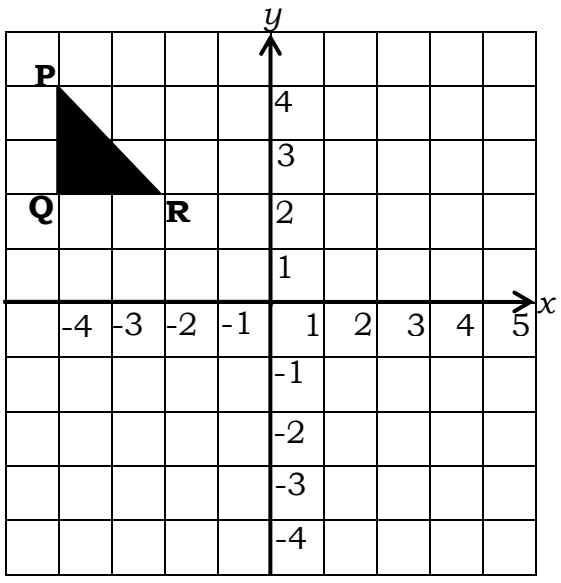
(b) $\frac{xy}{z}$ **(1 mark)**

14. The figure shown below is a quadrilateral:



Work out the angles marked t and v. **(2 marks)**

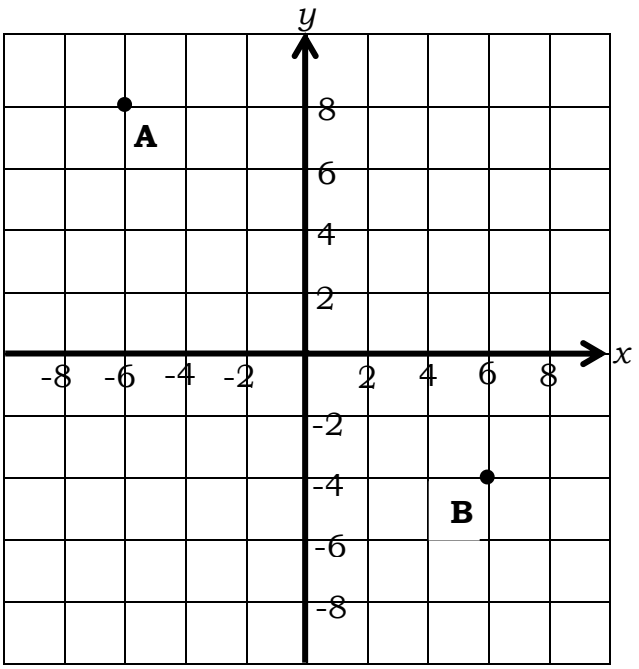
15. The triangle **PQR** below is to be translated using the vector $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$



Draw the image of triangle **PQR** in the **Answer Booklet** and label it as triangle **P' Q' R'**. **(2 marks)**

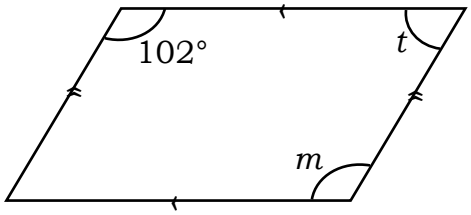
SECTION B (continued)

16. The points **A** and **B** are to be reflected in the y–axis.



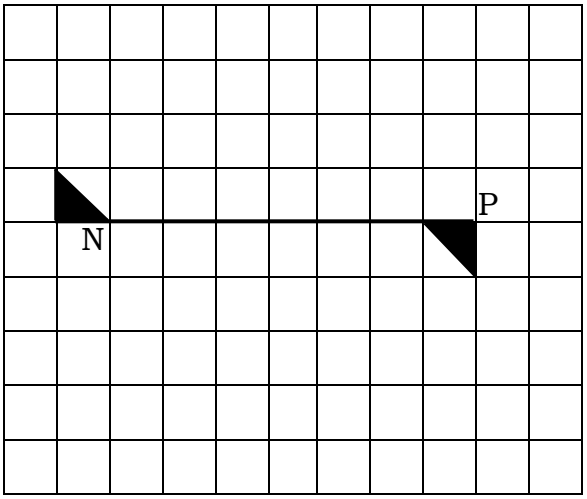
In the **Answer Book**, mark and label points **A'** and **B'** which are the respective images of **A** and **B** after the reflection in the y-axis. **(2 marks)**

17. A parallelogram is drawn below.



Work out the angles marked *m* and *t*. **(2 marks)**

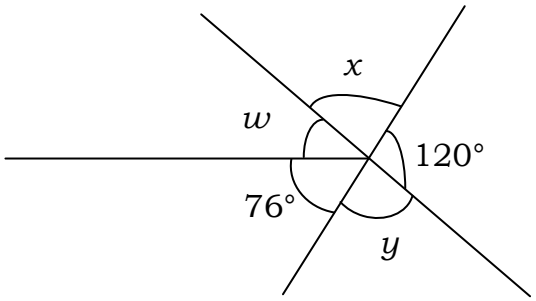
18. In the diagram given below, object N is rotated to give object P.



(a) In the **Answer Booklet**, locate the center of rotation and label it O.

(b) Find the value of the angle of rotation. **(2 marks)**

19. Study the diagram below.



(a) Angles x and y are called _____ _____ angles.

(b) Find the value of angle marked w. **(2 marks)**

20. (a) Factorise $3x + 2xy$

(b) Represent $\{0 < x \leq 4, x \in \mathrm{W}\}$ on the number line provided in the **Answer Booklet**. **(2 marks)**

SECTION C LONG ANSWER QUESTION [30 marks]

Answer **all** the questions in your **Answer Booklet**. **Each** question is worth **3 marks**. **Show all working**

1. In a school of 400 students, $\frac{1}{5}$ of the students are taking Basic Technology. $\frac{3}{4}$ of the students who don't take Basic Technology are taking Vernacular subjects.

   (a) How many students are taking Basic Technology? **(1 mark)**

   (b) How many students are not taking Basic Technology? **(1 mark)**

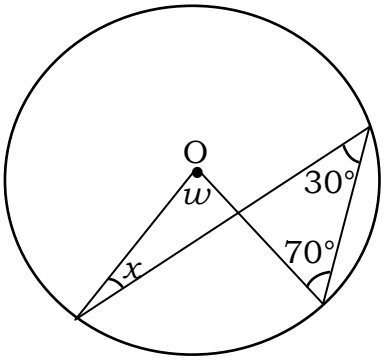
   (c) How many students are taking Vernacular subjects? **(1 mark)**

2. (a) Work out:

   $|-6|-4$ **(1 mark)**

   (b) Solve $-3x + 5 \leq 11$ **(2 marks)**

3. The diagram below shows angles subtended at the centre (0) and at the circumference by the same arc. Work out the angles marked w and x.



(3 marks)

4. Mary is two years older than her brother Tom. Their combined age is 12.

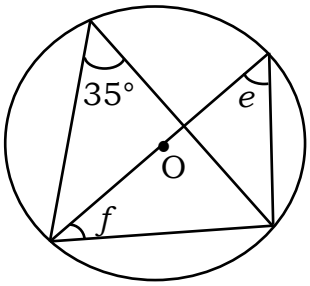
   (a) Write an equation to represent their combined ages. Let Mary's age be x. **(1 mark)**

   (b) How old is Mary? **(1 mark)**

   (c) How old is Tom? **(1 mark)**

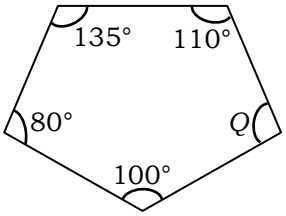
5. (a) Change 0.34 to fraction in its simplest form. **(1 mark)**

(b) The diagram below shows angles subtended at the circumference by the same arc. Work out the angles marked *e* and *f*. (Note: 0 is the centre of the circle)



(2 marks)

6. A polygon is drawn below.



(a) Name this polygon **(1 mark)**

(b) Calculate the value of angle marked *Q*. **(2 marks)**

7. Anna bought the following items from a supermarket near her home:

Bread	$1.50
Pawpaw	$2.00
Eggs	$10.00
Batteries	$6.50

(a) Work out the total cost of items bought by Anna. **(1 mark)**

(b) What percentage of the total cost was spent on batteries? **(1 mark)**

(c) Anna gave fifty dollars to the cashier. How much should she receive as her change for buying these items? **(1 mark)**

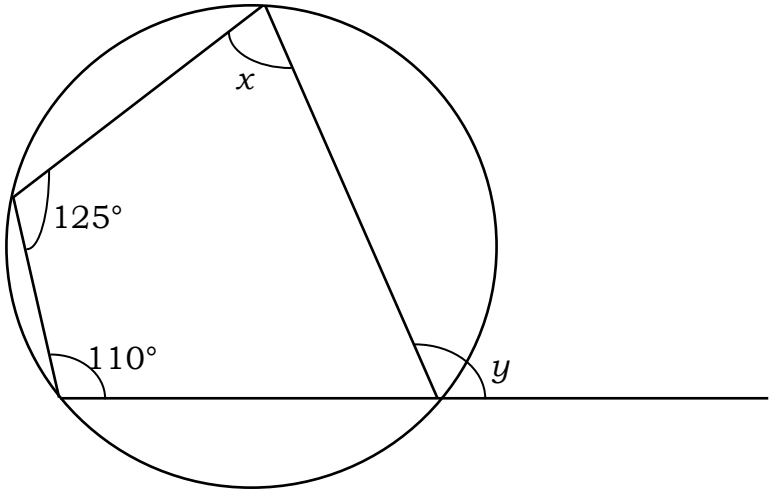
SECTION C (continued)

8. A boat takes 5 hours to travel from Kadavu Port to Suva.
Kadavu Port is 140km from Suva.

(a) Work out the speed of the boat in km/hr. **(2 marks)**

(b) If the same boat was to leave Kadavu Port at 7.30am, what time is it expected to reach Suva? **(1 mark)**

9. The quadrilateral shown below has all its 4 vertices touching the circumference of the circle.

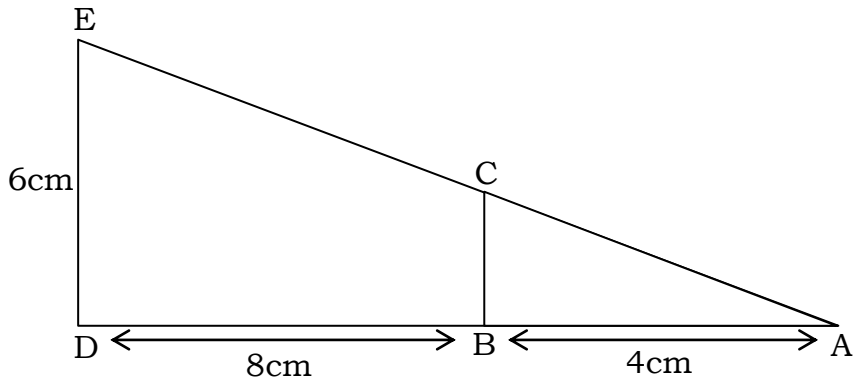


(a) What is the special name for this kind of quadrilateral? **(1 mark)**

(b) Calculate the angle marked x. **(1 mark)**

(c) Find the value of angle y. **(1 mark)**

10. In the diagram below, triangle ABC is enlarged to triangle ADE.



(a) Work out the length scale factor. **(1 mark)**

(b) Calculate the length of side BC. **(1 mark)**

(c) Find the area scale factor of this enlargement. **(1 mark)**

THE END