GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2019

GRADE 10

MATHEMATICS
PAPER 2

TIME: 1 hour

MARKS: 50

6 pages and 1 answer sheet

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

MATHEMATICS (Paper 2)

TIME: 1 hour

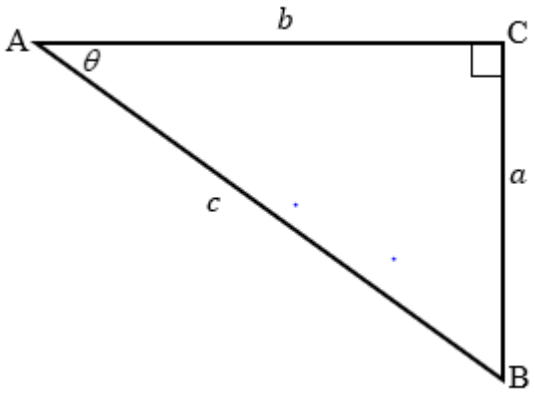
MARKS: 50

INSTRUCTIONS

1. This question paper consists of SIX questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs etc. which were used in determining the answers.
4. Answers only will not necessarily be awarded full marks.
5. An approved scientific calculator (non-programmable and non-graphical) may be used unless stated otherwise.
6. Where necessary, answers should be rounded off to TWO decimal places, unless stated otherwise.
7. Diagrams are NOT necessarily drawn to scale.
8. Number your answers according to the numbering system used in this question paper.
9. Write neatly and legibly.

QUESTION 1

1.1 A right-angled triangle ABC with sides a, b and c and an anlge θ is drawn below.

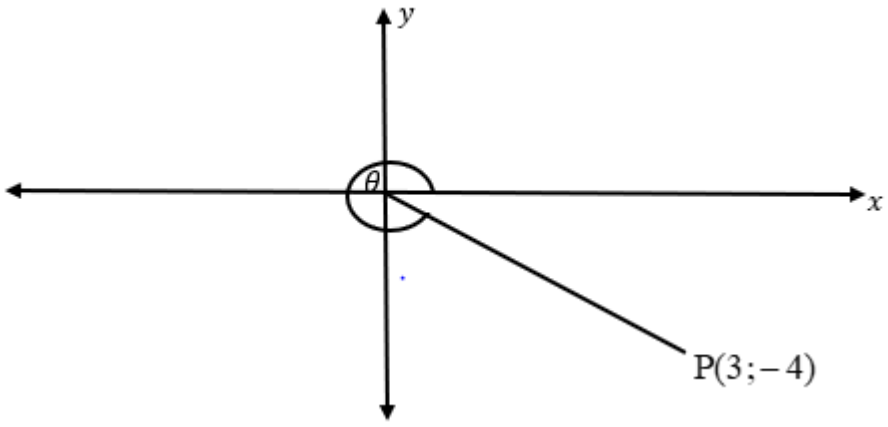


Write down the ratio of the following in terms of a, b and c:

1.1.1 $\cos\theta$ (1)

1.1.2 $\sin(90°-\theta)$ (1)

1.2 Make use of the diagram below to answer the questions without the use of a calculator.



1.2.1 Determine the value of $\frac{1}{4}\sin^2\theta$. (2)

1.2.2 Show that $\sec^2\theta - 1 = \tan^2\theta$. (3)

[7]

QUESTION 2

2.1 Use your calculator to determine the value of the following correct to 2 decimal places:

$$\sec 40° + \sqrt{\tan 50°} - \frac{3}{\sin^2 28°} \times \frac{1}{4}\cos 62° \quad (1)$$

2.2 Solve for θ, correct to 1 decimal place:

$$\frac{\cos(2\theta - 10°)}{2} = 0,091 \text{ and } \theta \in [0°; 90°] \quad (2)$$

2.3 Without the use of a calculator, determine the value of:

$$2\sin^2 60° - \sin 45°.\sec 45° + \frac{1}{4}\tan 10°.\cot 10° \quad (4)$$

[7]

QUESTION 3

3.1 **ON THE ANSWER SHEET** sketch the graphs of $f(x) = \sin x + 2$ and $g(x) = 2\cos x$ on the same set of axes for $0° \leq x \leq 360°$. The intercepts on both axes and the turning points should be clearly indicated. (4)

3.2 Use the sketch graphs to answer the following questions:

3.2.1 Write down the range of g. (1)

3.2.2 For which value(s) of x will f decrease? (2)

[7]

QUESTION 4

The points R(2 ; 5); U(−2 ; 1) and S(2 ; −3) are given.

4.1 Determine the midpoint of RS. (2)

4.2 Find the coordinate of point T, so that RUST forms a parallelogram. (3)

4.3 Calculate the length of RU. Leave your answer in surd form. (2)

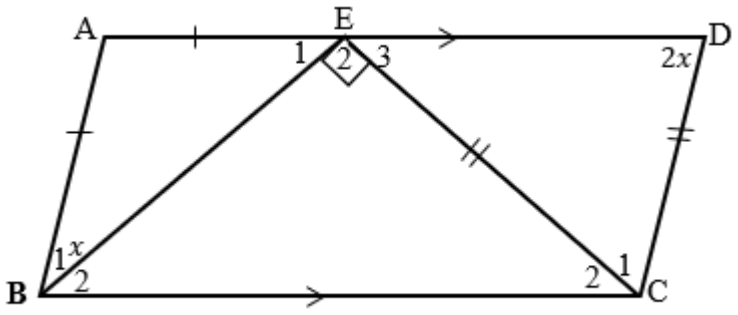
4.4 Given that RU||SP and SP = 2RU. Find the coordinates of point P so that RUSP forms a trapezium. (8)

[15]

QUESTION 5

5.1 Complete the statement :
If the opposite angles of a quadrilateral are equal then the quadrilateral is … (1)

5.2 In the diagram below, ABCD is a quadrilateral. E is a point on AD so that AE = AB and EC = CD. BEC = 90°. AD || BC. Let D = 2x and B_1 = x.



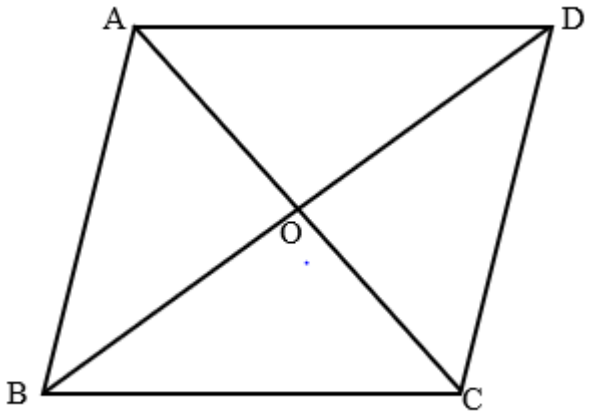
5.2.1 Determine the value of x. (4)

5.2.2 Prove that ABCD is a parallelogram. (4)

[9]

QUESTION 6

In the quadrilateral given, diagonals AC and BD bisect at O.
If $AC = 4xy$, $BC = x^2 + y^2$ and $BD = 2x^2 - 2y^2$, prove that ABCD is a rhombus.



(5)

[5]

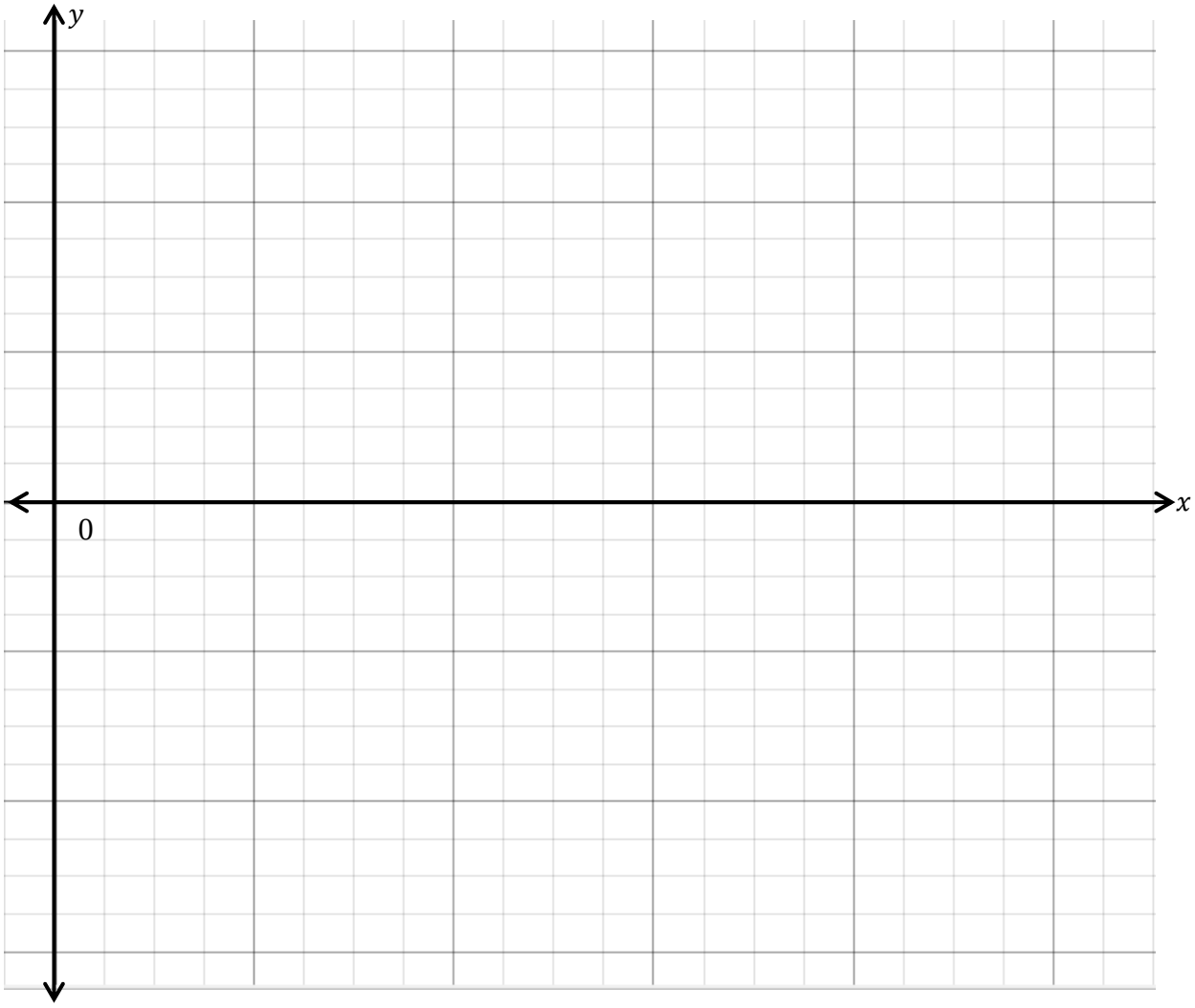
TOTAL: 50

MATHEMATICS (Paper 2)	7

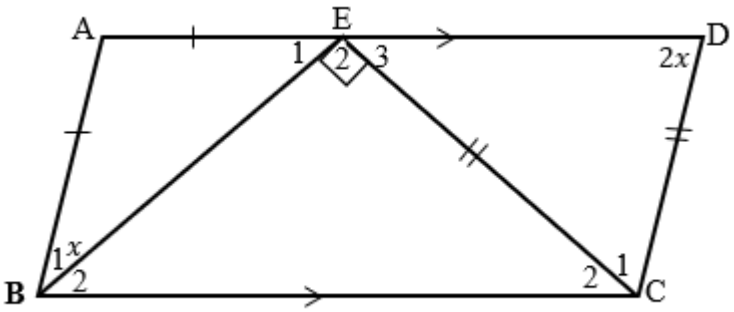
ANSWER SHEET

NAME AND SURNAME: _____

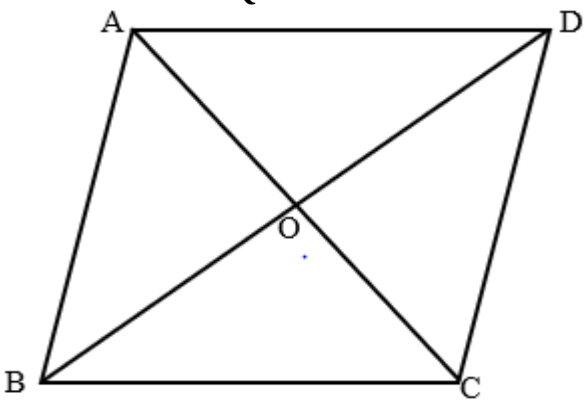
QUESTION 3



QUESTION 5



QUESTION 6



END