Education and Sport Development

Department of Education and Sport Development
Departement van Onderwys en Sport Ontwikkeling
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NORTH WEST PROVINCE

GRADE 10

MATHEMATICS PAPER 2

MID – YEAR EXAMINATION 2019

MARKS: 75

TIME: 1 hour 30 minutes

This question paper consists of 6 pages and 2 diagram sheets

INSTRUCTIONS AND INFORMATION

1.　　　This question paper consists of 5 questions Answer. ALL the questions.

2.　　　Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining the answers.

3.　　　An approved scientific calculator (non-programmable and non-graphical) may be used, unless stated otherwise.

4.　　　If necessary, answers should be rounded off to TWO decimal places, unless stated otherwise.

5.　　　Diagrams are NOT necessarily drawn to scale.

6.　　　Number the answers correctly according to the numbering system used in this question paper.

7.　　　It is in your own interest to write legibly and to present the work neatly.

Question 1

In the diagram below, P(7; 4), Q(6; 6), R(0; 3) and S(*t; k*) are the vertices of quadrilateral PQRS.
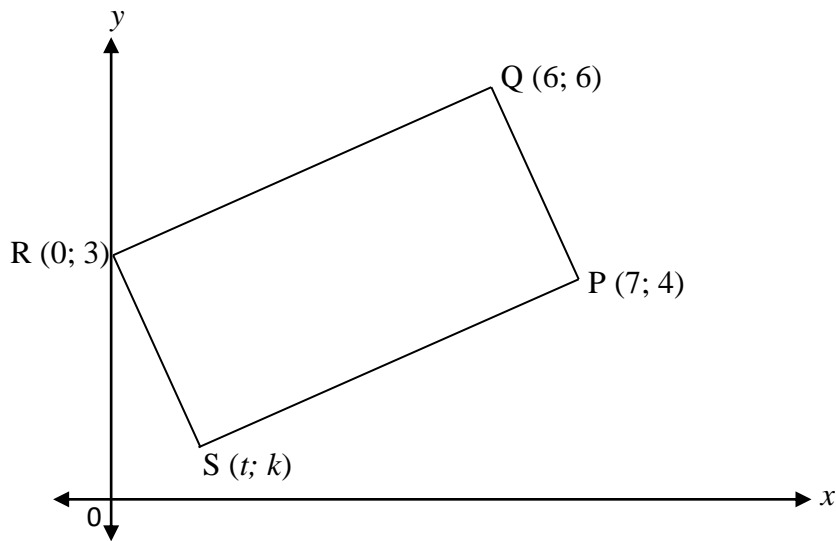
1.1　　Calculate the length of PQ. Leave your answer in a surd form.　　　　　(3)

1.2　　If T$\left(\dfrac{7}{2}; \dfrac{7}{2}\right)$ is the midpoint QS, determine the coordinates of S　　　(3)

1.3　　If the coordinates of S are (1; 1), show that PR = QS.　　　　　　　　(5)

1.4　　Show that QR $\perp$ RS.　　　　　　　　　　　　　　　　　　　　　(5)

1.5　　Hence, what type of special quadrilateral is PQRS? Motivate your answer.　　(2)

1.6　　Calculate the size of $R\hat{S}Q$.　　　　　　　　　　　　　　　(3)

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Question 2

2.1 Determine the value of each of the following by using a calculator. Write down the
answers correct to 2 decimal places. $x = 112,4^{\circ}$ and $y = 48,6^{\circ}$

$\quad$ 2.1.1 $\quad \dfrac{1}{2}\sin x$ $\hfill$ (2)

$\quad$ 2.1.2 $\quad \cos ec(x + y)$ $\hfill$ (3)

$\quad$ 2.1.3 $\quad 2\cos\left(\dfrac{x + y}{2}\right)$ $\hfill$ (2)

$\quad$ 2.1.4 $\quad \tan\left(\dfrac{1}{3}x\right)$ $\hfill$ (2)

2.2 $\quad$ Determine the value of θ, if $\theta \in (0°; 90°)$

$\quad$ 2.2.1 $\quad \tan\theta = 2,736$ $\hfill$ (1)

$\quad$ 2.2.2 $\quad 3\sin(3\theta - 60^{\circ}) = 0,531$ $\hfill$ (3)

$\hfill$ **[13]**

Question 3

In the diagram below P (x; 5), OP = 13 units. Answer questions below without using a
calculator.
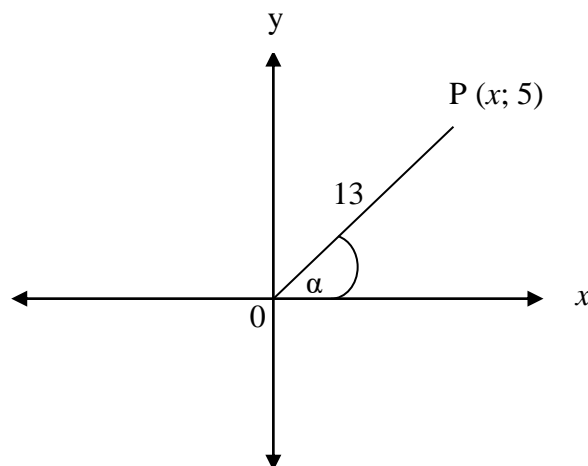
3.1 Determine;

    3.1.1 x (3)

    3.1.2 $\tan \alpha$ (1)
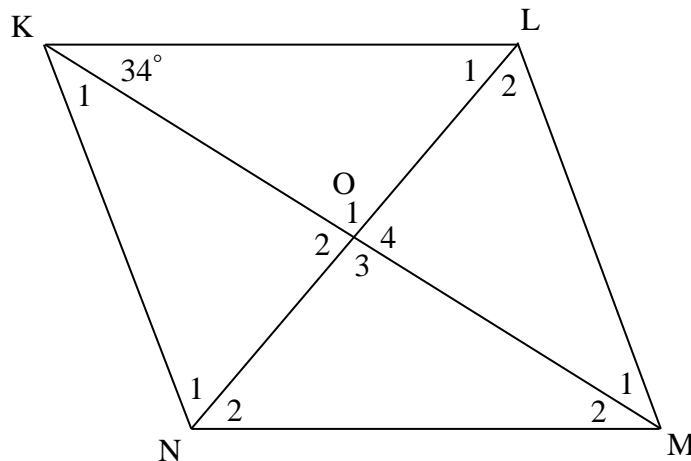
    3.1.3 $\sin^2 \alpha + \cos^2 \alpha$ (2)

    3.1.4 $Sec\alpha$ (2)

3.2 Simplify without using a calculator.

$$\frac{\cos ec20°.\sin 20° + \tan 45°.\sec 60°}{\cot 45°.\sin 90°}$$ (6)

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Question 4

4.1 In the diagram below, KLMN is a rhombus with diagonals intersecting at O.
LKM = 34°

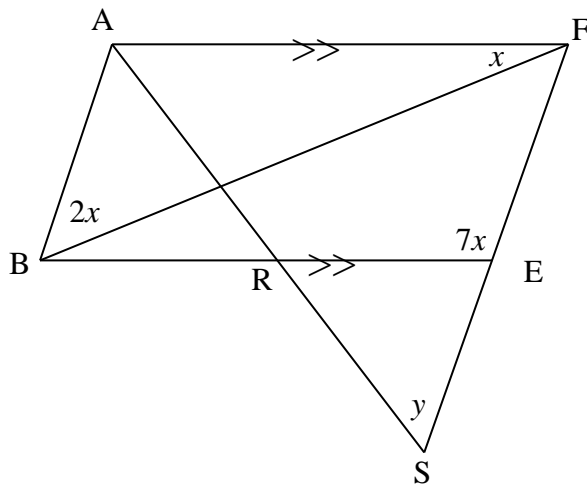   4.1.1   Write down the size of $\hat{O}_1$.   (2)

    4.1.2   Calculate the size of $\hat{L}_1$.   (2)

    4.1.3   Calculate the size of $K\hat{N}M$.   (4)

4.2 In the diagram given below, ABEF is a parallelogram

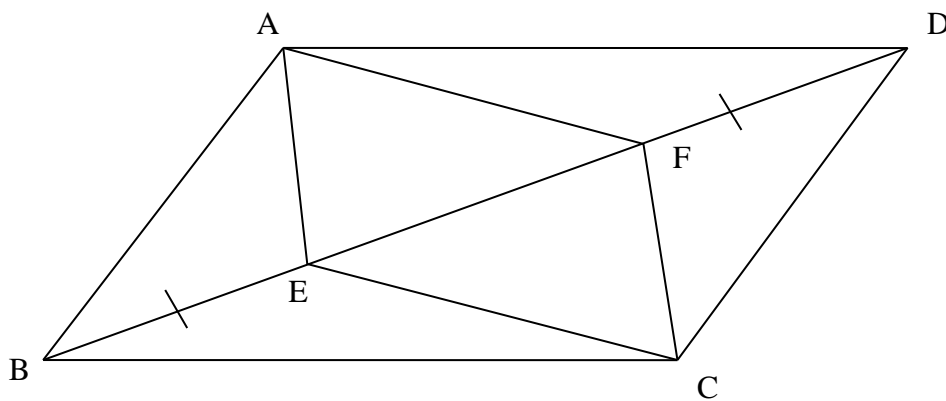4.2.1   Express $A\hat{F}E$ in terms of x (3)

4.2.2   Calculate the value of x and y if SA = SF.   (6)

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Question 5

The diagram represents parallelogram ABCD with BE = DF

Prove that:

5.1 $\triangle AEB \equiv \triangle CFD$ (4)
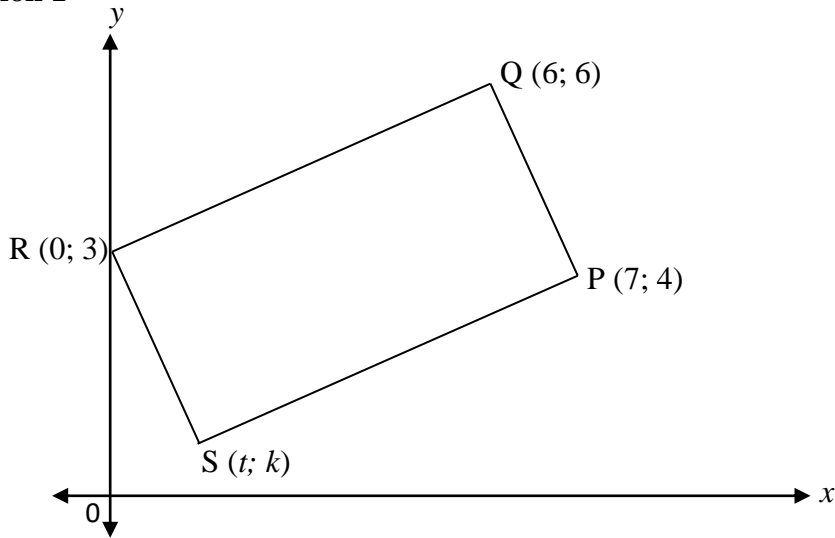
5.2   AE ‖ CF   (3)
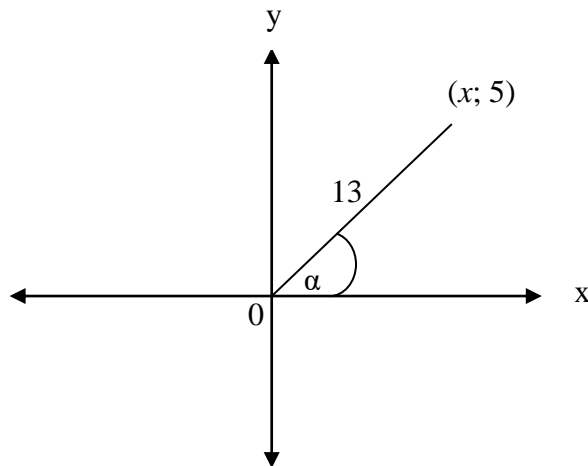
5.3   AECF is a parallelogram   (3)
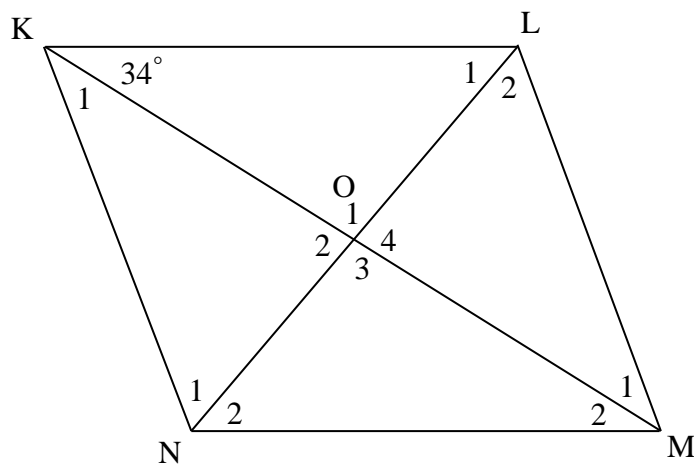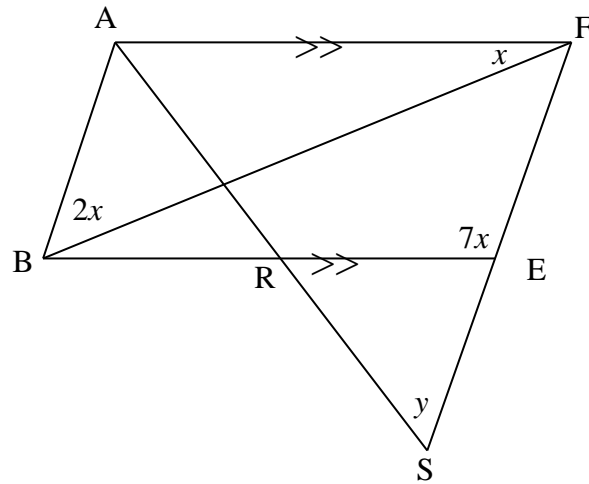
[10]

Diagram Sheet

Name: _____

Question 1

Question 3

3.1

Question 4

4.1

4.2

Question 5