



MARITZBURG
COLLEGE

**NOVEMBER
EXAMINATIONS
2017**

**GRADE 8
MATHEMATICS**

MARKS: 120

TIME: 2 HOURS

Instructions to the learner

1. Write your name and your Maths Teacher's name on your script.
2. Question 1 consists of 10 multiple-choice questions. Write only the letter of the correct answer next to the question number.
3. All working must be shown from Question 2 onwards.
4. You may assume all lines are straight.
5. Approved scientific calculators may be used unless stated otherwise in the question.

QUESTION 1

1.1 Which of the following sets of numbers represent the factors of 12?

- A {2 ; 4 ; 6 ; 8 ; 10 ; 12}
- B {1 ; 12 }
- C {1 ; 2 ; 3 ; 4 ; 6 ; 12}
- D {12 ; 24 ; 36}

1.2 Complete: $m^5 \times m^3 =$

- A m^{15}
- B $2m^8$
- C m^8
- D $2m^{15}$

1.3 Complete: $5x + 3x =$

- A $15x^2$
- B $8x$
- C $8x^2$
- D $15x$

1.4 If $p = 3$ and $q = -3$ and $r = \frac{p}{q}$, then the value of r^3 is:

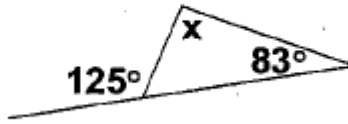
- A -3
- B -1
- C 1
- D 3

1.5 If $a = 5$, $b = 6$ and $c = -3$, then $a - b - 2c$ has a value of...

- A -7
- B 5
- C 3
- D 7

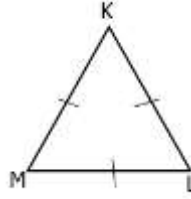
1.6 The size of x in the diagram is:

- A 42°
- B 55°
- C 48°
- D 28°



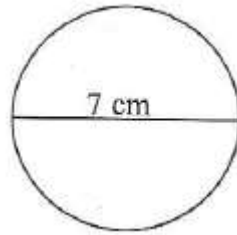
1.7 $\triangle KLM$ is an example of :

- A an isosceles triangle
- B an equilateral triangle
- C a right angled triangle
- D an obtuse angled triangle



1.8 The area of the given circle, correct to 2 decimal places, is...

- A $38,48\text{cm}^2$
- B $153,94\text{cm}^2$
- C $21,99\text{cm}^2$
- D $53,77\text{cm}^2$



1.9 The supplement of 60° is:

- A 30°
- B 130°
- C 120°
- D 180°

1.10 The complement of x is:

- A $90^\circ - x$
- B $180^\circ - x$
- C x
- D $2x$

[10]

QUESTION 2

2.1 Answer the following questions:

2.1.1 Complete by writing 16 and 56 each as a product of its prime factors.

$$\begin{aligned} 16 &= \underline{\hspace{4cm}} \\ 56 &= \underline{\hspace{4cm}} \end{aligned} \quad (2)$$

2.1.2 Determine the LCM of 16 and 56. (1)

2.2 Calculate the following without using a calculator. Show your working.

2.2.1 $-12 - 2(-3)$ (2)

2.2.2 $-1\frac{1}{2} + 2\frac{1}{7}$ (3)

2.2.3 $-\frac{5}{8} \times \frac{1}{10}$ (2)

2.2.4 $\frac{14}{4} \div \frac{21}{10}$ (3)

2.2.5 $\sqrt{225 - 81}$ (2)

2.3 Study the given number sequence and answer the questions that follow.

1 ; 5 ; 9 ; 13 ; ...

2.3.1 Write down the next two terms in the sequence. (2)

2.3.2 Determine the general term (T_n) of the sequence. (2)

2.3.3 Which term in the sequence will have a value of 233? (2)

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QUESTION 3

3.1 Given the expression $-3x^2 + x + 5$,

3.1.1 How many terms are there in the expression? (1)

3.1.2 What is the degree of the expression? (1)

3.1.3 Write down the coefficient of x . (1)

3.1.4 Write down the coefficient of x^2 . (1)

3.1.5 Write down the constant in the expression. (1)

3.2 Simplify the following expressions:

3.2.1 $5a + 3a^2 + 4a - 5a^2$ (2)

3.2.2 $(3x^5)^2$ (2)

3.2.3 $\frac{6a^4 + 3a^3 - 15a^2}{3a^2}$ (3)

3.2.4 $a^2 \times b \times a^3 \times b^4$ (2)

3.2.5 $-3x^2(4x^2 - 3x - 1)$ (3)

3.2.6 $\sqrt{25x^6 - 16x^6}$ (3)

3.3 Solve for x in each of the following. Show your working.

3.3.1 $6x + 3 = 3x + 12$ (3)

3.3.2 $\frac{x-2}{3} + 1 = 4$ (3)

3.3.3 $2(x-4) + 4 = 8$ (4)

3.4 Peter has R3 more than John who has R x . Together they have R75.

Express the information in an equation and then calculate the amount that John has.

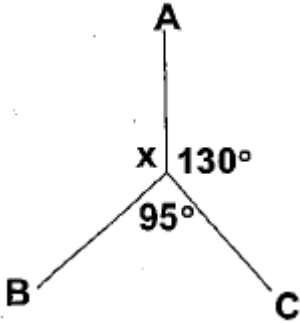
(3)

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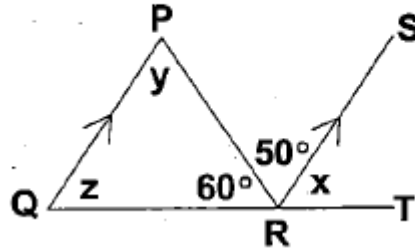
QUESTION 4

4.1 Calculate the sizes of the angles marked with x , y , z , a or b in each diagram and give reasons for your answers.

4.1.1



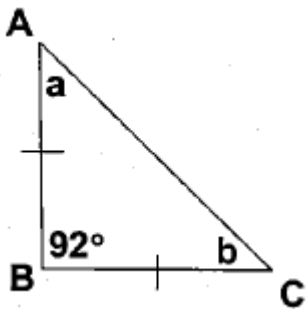
4.1.2



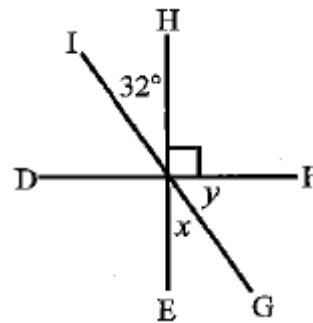
(2)

(6)

4.1.3



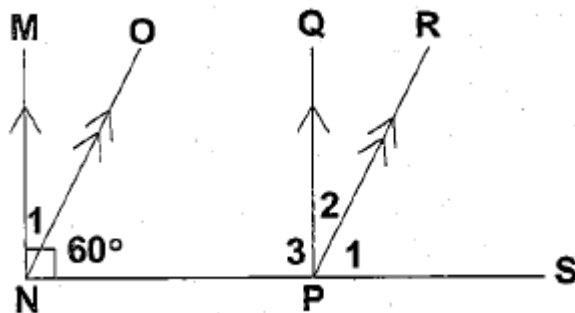
4.1.4



(4)

(4)

4.2 Study the diagram below.



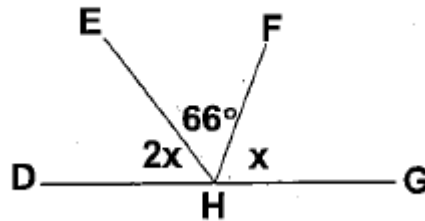
Calculate, with reasons the size of:

4.2.1 \hat{N}_1 (2)

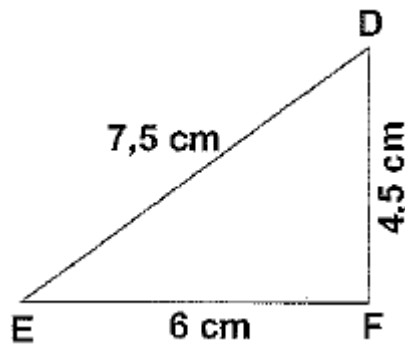
4.2.2 \hat{P}_1 (2)

4.2.3 \hat{P}_3 (2)

4.3 Set up an equation, with a reason, and then calculate the size of x in the following diagram.



4.4 Show by calculation that $\triangle DEF$ is a right angled triangle. (3)



(3)
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QUESTION 5

5.1 The percentage gained by 20 grade 8 learners in a Natural Science test were as follows:

13 17 21 24 29 32 34 36 38 43
45 46 48 49 53 57 61 61 72 83

Determine:

5.1.1 the mean (2)

5.1.2 the mode (1)

5.1.3 the median (2)

5.1.4 the range (2)

5.1.5 what percentage of learners got less than 50% in the test. (2)

5.2 A purse contains 4 50c coins, 6 R1 coins and 2 R5 coins.
A coin is drawn randomly from the purse.

5.2.1 What is the probability that it is a R1 coin? (2)

5.2.2 What is the probability that it is a 50c coin? (2)

QUESTION 6

$$A = l \times b$$

$$A = l^2$$

$$A = \pi r^2$$

$$A = \frac{1}{2} b \times h$$

$$P = 2l + 2b$$

$$P = 4 \times l$$

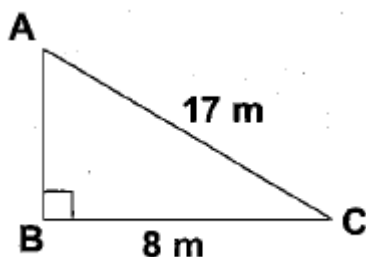
$$C = 2\pi r$$

$$P = \text{side} + \text{side} + \text{side}$$

$$\text{Volume} = l \times b \times h$$

$$\text{Total surface area} = 2(l \times b) + 2(l \times h) + 2(b \times h)$$

6.1 A right-angled triangle is given below:



6.1.1 Calculate the length of AB, and give a reason. (3)

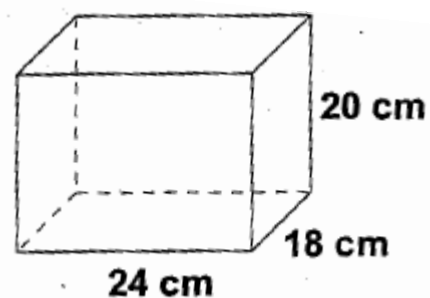
6.1.2 Calculate the perimeter of the triangle. (2)

6.1.3 Calculate the area of the triangle. (2)

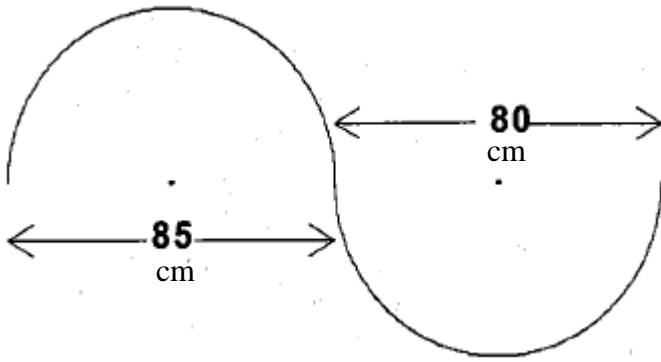
6.2 A rectangular prism is given below:

6.2.1 Calculate the volume of the prism. (2)

6.2.2 Calculate the total surface area of the prism. (3)



6.3 Determine the length of the curve rounded off to 2 decimal places.



(5)
[16]