



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ANNUAL NATIONAL ASSESSMENTS 2010

GRADE 9 MATHEMATICS - ENGLISH

FORM B

SURNAME

GENDER (TICK ☒)

BOY

GIRL

NAME(S)

PROVINCE

DATE OF BIRTH

SCHOOL NAME

EMIS NO.

DISTRICT / REGION

Instructions to learners:

1. Question 1 consists of 10 multiple choice questions. Learners must circle the letter of the correct answer (see example below).
2. Learners must provide answers to questions 2 to 8 in the spaces provided.
3. Approved scientific calculators (non-programmable and non graphical) may be used.
4. The test duration is $2\frac{1}{2}$ hours.

Example

Circle the letter of the correct answer.

Which number comes next in the pattern?

2 ; 4 ; 6 ; 8 ; _____

a. 9

b. 10

c. 12

d. 20

You have done it correctly if you have circled **b** as above.

The test starts on the next page.

QUESTION 1

1.1 If $4(x+3)(2x-1)=0$ then $x=$

- A. -3 or $\frac{1}{2}$
- B. 4 or $\frac{1}{2}$
- C. 0 or 3
- D. 4 or -3

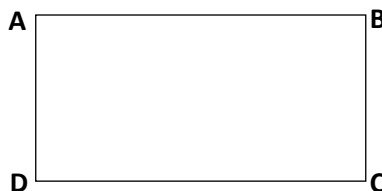
1.2 $\frac{(x^4)(x^2)^3}{(x^{-3})^{-2}}=$

- A. x^3
- B. x^4
- C. x^8
- D. x^{16}

1.3 In rectangle ABCD, $DC = 12 \text{ cm}$ and diagonal $BD = 15 \text{ cm}$.

What is the length of BC in cm ?

- A. 3
- B. 27
- C. $\sqrt{369}$
- D. 9

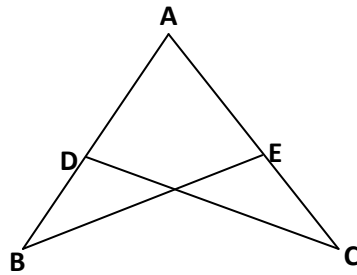


1.4 A circle has a diameter of 6 cm . What is the area in cm^2 of one quarter of the circle?

- A. 36π
- B. 9π
- C. $\frac{9}{4}\pi$
- D. $\frac{9}{2}\pi$

1.5 In the adjacent figure, $AB = AC$ and $AE = AD$. Why is $\triangle ABE \cong \triangle ACD$?

- A. S S S
- B. 90° H S
- C. S < S
- D. < < S



1.6 If $x = -2$ then the value of $-x^2 + 3x - 4 =$

- A. -6
- B. 6
- C. -14
- D. -8

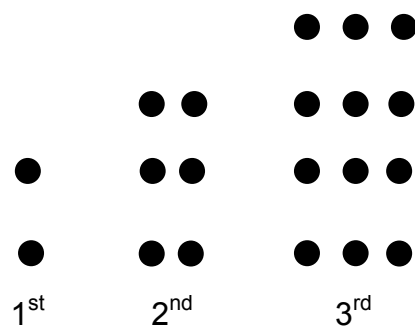
1.7 The 3-D figure which has 5 faces, 5 vertices and 8 edges is a:

- A. cylinder
- B. triangular prism
- C. square-based pyramid
- D. triangular pyramid

1.8 In scientific notation $4 \times 10^{-12} \times 7 \times 10^{-7} =$

- A. 28×10^{-20}
- B. $2,8 \times 10^{-18}$
- C. $2,8 \times 10^{-20}$
- D. $0,28 \times 10^{-18}$

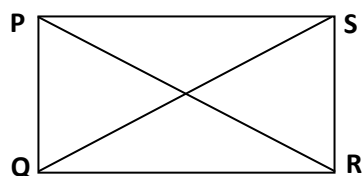
1.9 Study this growing pattern.



How many dots will there be in the sixth dot array if this dot array is continued?

- A. 56
- B. 36
- C. 42
- D. 30

1.10 Which angle in rectangle PQRS is the angle of elevation of P from R?



- A. \hat{RQS}
- B. \hat{PQR}
- C. \hat{PRQ}
- D. \hat{SPR}

[10]

QUESTION 2

2.1 Simplify:

2.1.1 $(x + 2)^2 - (x + 1)(x - 3)$

(3)

2.1.2
$$\frac{6x^2y \times 8xy^3}{12x^4y^2}$$

(3)

2.1.3
$$\frac{-16x^3 - 8x^2 + 2x}{-2x} - (4x - 1)$$

(5)

2.2 Multiply and simplify:

2.2.1 $\frac{3}{4}(12a^2 - 8a - 4)$

(3)

2.2.2 $(a + 2)(a^2 - 2a + 4)$

(3)

2.3 Factorise fully:

2.3.1 $2x^2y^2 - 4x^2y + 10xy^2$

(2)

2.3.2 $9x^2 - y^2$

(2)

2.3.3

$$2x^3 - 8x$$

(3)

2.4 Use prime factors to determine the value of $\sqrt{1089}$

(4)

2.5 Solve for x :

2.5.1

$$3(x - 1) - 4x = 5 - 2(x + 1)$$

(3)

2.5.2

$$\frac{2}{3}x - 1 = x$$

(3)

2.5.3

$$\frac{x-2}{4} - \frac{x+1}{3} = \frac{x-2}{12}$$

(5)

[39]

QUESTION 3

3.1 Calculate the simple interest on R5 400 at 6% per annum for 4 years?

(4)

- 3.2 Mark borrowed R8 000 from the bank at 5% per annum compound interest for 3 years. How much must he repay to the bank at the end of 3 years?

(5)

- 3.3 The time taken by the different sets of pumps to empty a water tank is given in the table below.

Number of pumps	20	10	5
Time in hours	2	4	8

- 3.3.1 Is this an example of direct or inverse proportion?

(1)

- 3.3.2 Calculate how long it will take 16 pumps to empty the water tank.

(2)

- 3.4 If 4,5 kg of sugar costs R36, what will 2,5 kg of sugar cost?

(3)

[15]

QUESTION 4

- 4.1 Write down the next two terms in the given sequence:
5; 9; 13; ... ; ...

(2)

- 4.2 Describe the pattern in QUESTION 4.1 in your own words.

(1)

- 4.3 Write down the general term of the given sequence in the form

$$T_n = \underline{\hspace{2cm}}.$$

(2)

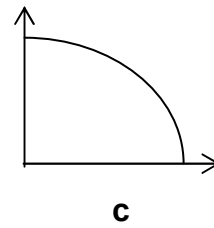
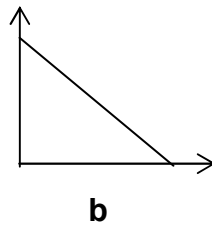
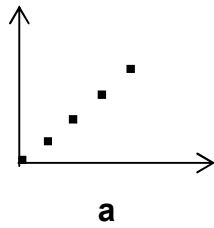
- 4.4 Which term in the sequence is equal to 101?

(4)

[9]

QUESTION 5

5.1 Use the graphs below to answer the questions that follow.



Which of the above graphs represents:

5.1.1 A decreasing, continuous, non-linear function?

_____ (1)

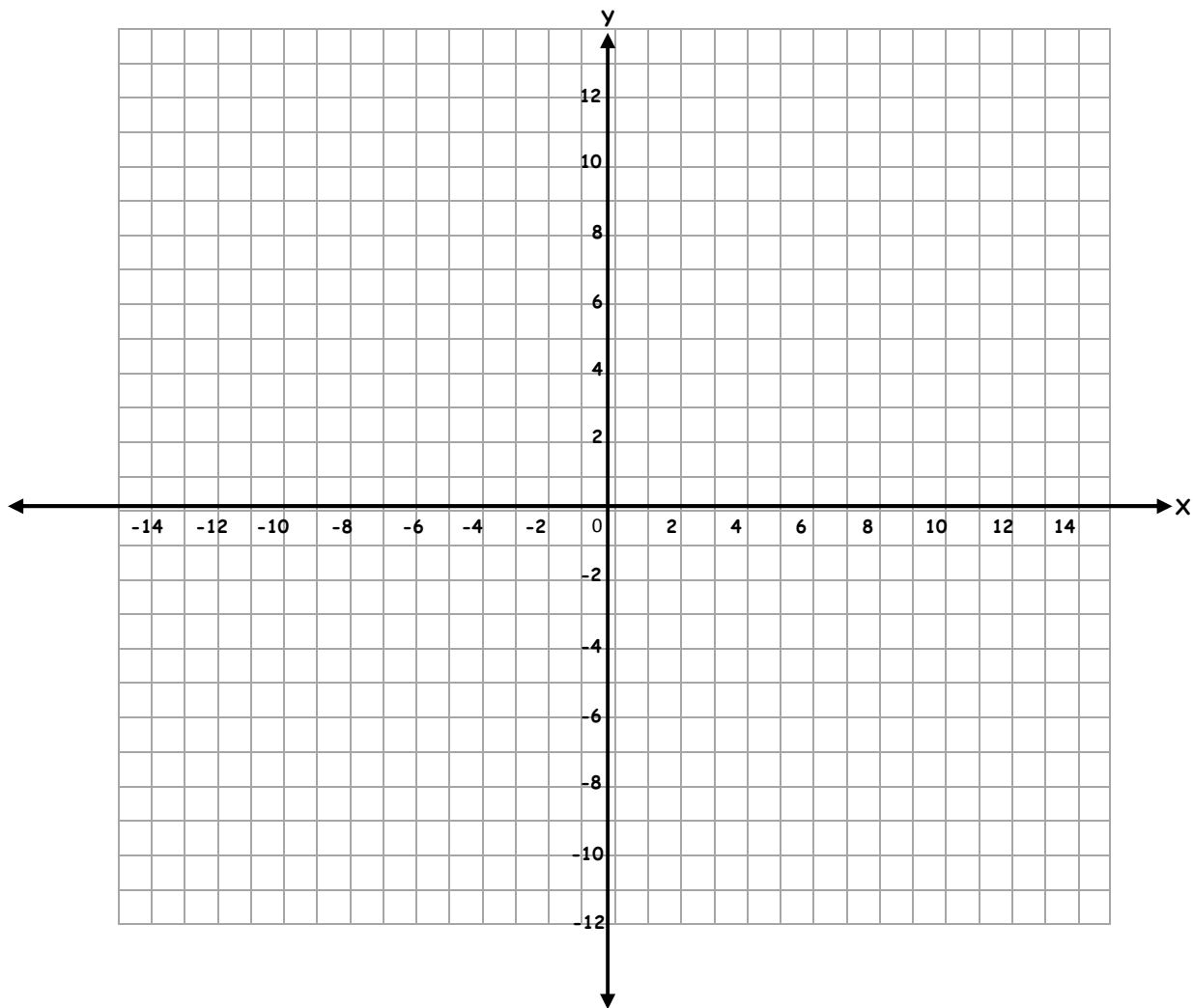
5.1.2 A discrete, increasing, linear function?

_____ (1)

5.2 Use the grid below. On the same system of axes draw and label the graphs defined by:

$$y = 2 - x, \quad \text{for } x \in \{-2; -1; 0; 1\} \quad \text{and}$$
$$y = 2x - 3, \quad \text{for } x \in \mathbb{R}$$

(7)

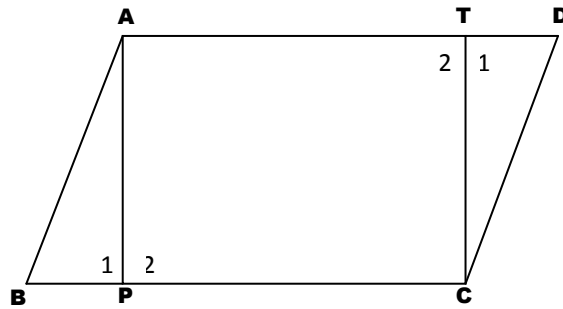


[9]

QUESTION 6

In QUESTION 6 give reasons for each of your statements.

- 6.1 In the given diagram $AD = BC$, $AB = CD$, $AP \perp BC$, $AD \perp TC$, $AP \parallel TC$, $AD = 24$ cm, $BP = 8$ cm and $AP = 12$ cm.



- 6.1.1 What kind of quadrilateral is ABCD? Give a reason for your answer.

(2)

- 6.1.2 Calculate the area of quadrilateral APCD.

(4)

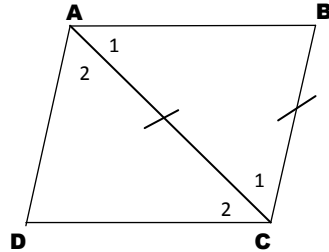
- 6.1.3 State why is $AP = TC$?

(1)

- 6.1.4 Prove that $\triangle ABP \cong \triangle CDT$

(4)

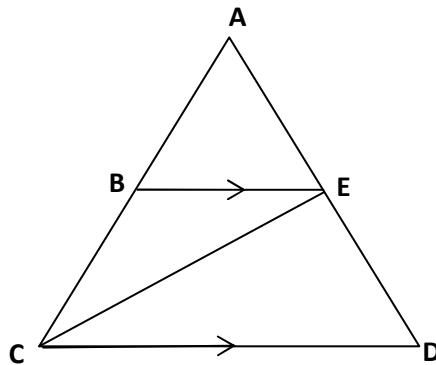
6.2 In the figure below, ABCD is a parallelogram. $AC = BC$ and $\hat{C}_1 = 40^\circ$.



Calculate the size of \hat{BAD}

(9)

6.3



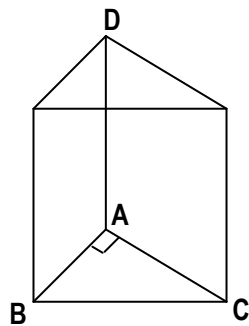
6.3.1 Which triangle is similar to $\triangle ACD$?

(1)

6.3.2 If $AE : AD = 3 : 8$ and $AB = 9\text{cm}$, determine the length of BC .

(6)

6.4 The base of an given triangular prism is a right-angled triangle with $AB = 5\text{ m}$, $AC = 12\text{ m}$ and the height of the prism = 20 m .



6.4.1 Calculate the volume of the prism.

(3)

[illegible]

[38]

The following marks were obtained by a group of grade 9 learners in a Mathematics test out of 100.

38	52	68	81	72
31	45	55	74	49
52	47	64	58	84

[illegible]

16

7.2 From the data set determine each of the following:

7.2.1 The range.

(2)

7.2.2 The mode.

(1)

7.2.3 The median.

(2)

7.2.4 The mean.

(3)

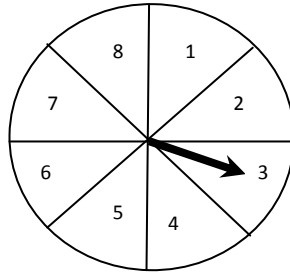
7.3 How many learners obtained more than 55% for the test?

(2)

[14]

QUESTION 8

8. If the spinner below is rotated, determine the probability that the arrow will point to:



- 8.1 a number greater than 6.

(2)

- 8.2 a prime number.

(2)

- 8.3 a factor of 8.

(2)

[6]

Total [140]