

# **MATHEMATICS**

FOR

**Junior Secondary School**

# **1**

**Practice Questions and Answers**



**EDUBASE**

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Mathematics Exam Questions and Answers Pack

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# QUESTIONS

**TOPIC: ALGEBRA*****DIRECTION: Choose the correct answer from the lettered options.***1. Simplify  $2b + (3b - 4c)$ .

- A.  $5b - 4c$
- B.  $6b^2 - 8bc$
- C.  $2b - 7bc$
- D.  $8b + 3c$

2. Simplify  $3b \times 11ab$ .

- A.  $11/3ab^2$
- B.  $11ab$
- C.  $33ab^2$
- D.  $14ab$

3. Simplify  $30pq \div 6$ .

- A.  $5pq$
- B.  $15pq$
- C.  $35pq$
- D.  $12pq$

4. Simplify  $3b \times 11ab$ .

- A.  $11/3ab^2$
- B.  $11ab$
- C.  $33ab^2$
- D.  $14ab$

5. Simplify  $2xy \times 9y$ .

- A.  $4\frac{1}{2}xy^2$
- B.  $18xy^2$
- C.  $9xy$
- D.  $11xy^2$

6. Simplify  $7g + (3g + 4h)$ .

- A.  $21g^2 + 7h$
- B.  $7g + 7h$
- C.  $10g + 4h$
- D.  $10g + 11h$

7. Simplify  $7a \times 2 + 5 \times 8a - 6a \times 9$ .

- A.  $14a$
- B.  $10a$
- C.  $40a$
- D. 0

8. Find the value of  $16 \times 2 - 3 + 14 \div 7$ .

- A. 32
- B. 42
- C. 14
- D. 31

9. Simplify  $48x^2y/12xy$ .

- A.  $6x$
- B.  $4x$
- C.  $14x$
- D.  $6xy$

10. Simplify  $2b + (3b - 4c)$ .

- A.  $5b - 4c$
- B.  $6b^2 - 8bc$
- C.  $2b - 7bc$
- D.  $8b + 3c$

11. Simplify  $8v \times 2 + 5v \div 5 - 12v$ .

- A.  $16v$
- B.  $5v$
- C.  $60v$
- D.  $4v$

12. Find the value of  $16 \times 2 - 3 + 14 \div 7$ .

- A. 32
- B. 42
- C. 14
- D. 31

13. Simplify  $2xy \times 9y$ .

- A.  $4\frac{1}{2}xy^2$
- B.  $18xy^2$
- C.  $9xy$
- D.  $11xy^2$

14. Write the following without brackets;  $(6a - b) + (c - 4d)$ .

- A.  $2a - b + c - 4d$
- B.  $6a + b + c - 2d$

C.  $6a - b + c - 4d$

D.  $4a - b + c - 2d$

15. Simplify  $7g + (3g + 4h)$ .

A.  $21g^2 + 7h$

B.  $7g + 7h$

C.  $10g + 4h$

D.  $10g + 11h$

16. Remove brackets from  $5(4x - r) - 7(2x - 3r)$ .

A.  $4x + 9r$

B.  $3x - 25r$

C.  $5x + 11r$

D.  $6x + 16r$

E.  $2x + 7r$



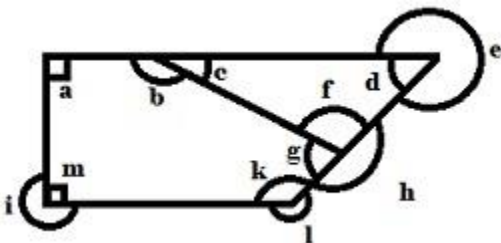
**TOPIC: ANGLES**

**DIRECTION:** Choose the correct answer from the lettered options.

1. A seven-sided polygon is called \_\_\_\_\_

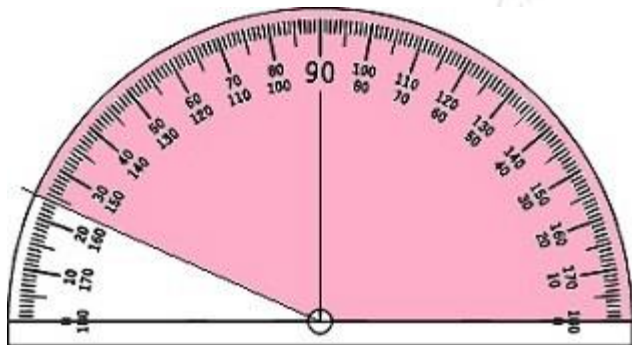
- A. a triangle
- B. a heptagon
- C. a decagon
- D. an octagon
- E. a hexagon

2. In the figure shown, c is \_\_\_\_\_ angle.



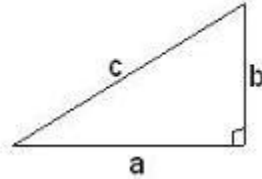
- A. a reflex
- B. a right
- C. an acute
- D. an obtuse

3. Read off the size of the angle in the protractor shown.



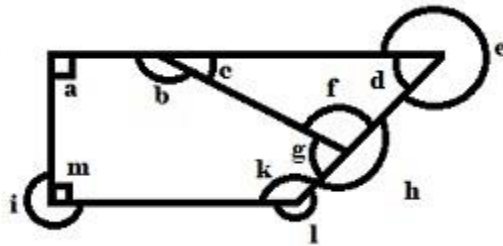
- A.  $180^\circ$
- B.  $50^\circ$
- C.  $156^\circ$
- D.  $25^\circ$

4. In the diagram below, which one of the following equation gives the value of  $a^2$ ?



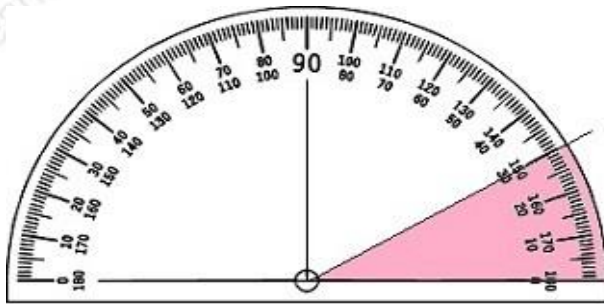
- A.  $a^2 = b^2 - c^2$
- B.  $a^2 = b^2 + c^2$
- C.  $a^2 = (c - b)^2$
- D.  $a^2 = (b - c)^2$
- E.  $a^2 = c^2 - b^2$

5. In the figure shown, b is \_\_\_\_\_ angle.



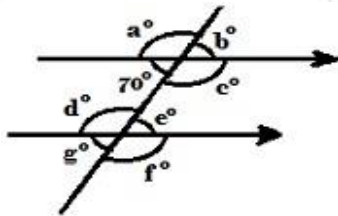
- A. an obtuse
- B. a reflex
- C. an acute
- D. a right

6. Read off the size of the angle in the protractor shown.



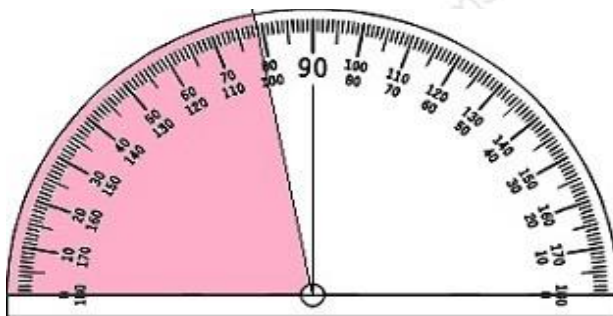
- A.  $30^\circ$
- B.  $150^\circ$
- C.  $80^\circ$
- D.  $60^\circ$

7. Find the size of  $c^\circ$  in the diagram drawn.



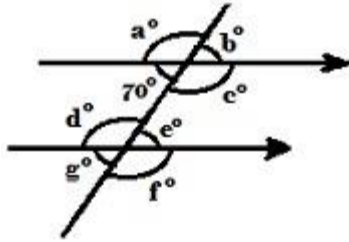
- A.  $35^\circ$
- B.  $110^\circ$
- C.  $70^\circ$
- D.  $20^\circ$

8. Read off the size of the angle in the protractor shown.



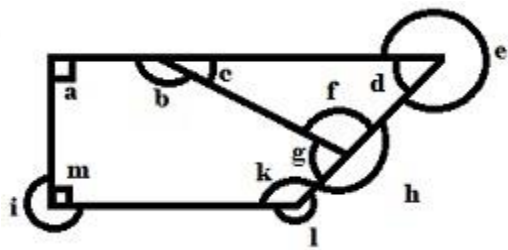
- A.  $100^\circ$
- B.  $110^\circ$
- C.  $20^\circ$
- D.  $79^\circ$

9. Find the size of  $b^\circ$  in the diagram drawn.



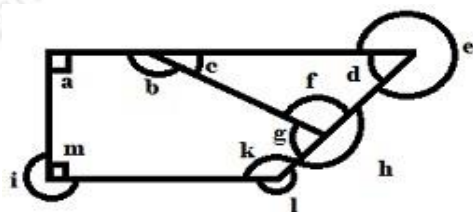
- A.  $70^\circ$
- B.  $110^\circ$
- C.  $35^\circ$
- D.  $20^\circ$

10. In the diagram drawn,  $a$  is \_\_\_\_\_ angle.



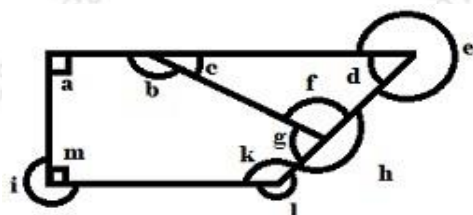
- A. an obtuse
- B. an acute
- C. a reflex
- D. a right

11. In the figure shown, e is \_\_\_\_\_ angle.



- A. an acute
- B. an obtuse
- C. a straight line
- D. a reflex

12. In the figure shown, h is \_\_\_\_\_ angle.



- A. a straight line
- B. an acute
- C. an obtuse
- D. a reflex

13. A triangle has sides of  $X$ cm,  $(X + 4)$  cm and 11cm. If the perimeter of the triangle is less than 30cm, find the possible values of  $X$ .

- A.  $X < 7$  or  $X > 3\frac{1}{2}$
- B.  $X > 7$  or  $X < -3\frac{1}{2}$
- C.  $X < 7\frac{1}{2}$  or  $X > 3\frac{1}{2}$
- D.  $X > 7\frac{1}{2}$  or  $X > 3\frac{1}{2}$
- E.  $X < -7$  or  $X > -3\frac{1}{2}$

**TOPIC: AREA OF SHAPES****DIRECTION: Choose the correct answer from the lettered options.**

1. A board measures  $2\frac{1}{2}$  m by  $1\frac{1}{4}$  m and costs ₦250. Calculate the cost of  $1\text{m}^2$  of the board.

- A. ₦500
- B. ₦125
- C. ₦1000
- D. ₦80

2. A floor 4m long and  $3\frac{1}{2}$  m wide is to be concreted. Find the cost, if concrete costs ₦12,000 per  $\text{m}^2$ .

- A. ₦146,000
- B. ₦168,000
- C. ₦420,000
- D. ₦160,000

3. A school assembly area is in the shape of a 25m by 25m square. A part of the area is a concrete rectangle 20m by 3m, the rest is grass. Calculate the area of the grass.

- A.  $685\text{m}^2$
- B.  $500\text{m}^2$
- C.  $565\text{m}^2$
- D.  $515\text{m}^2$

4. A four sided plane shape is called \_\_\_\_\_.

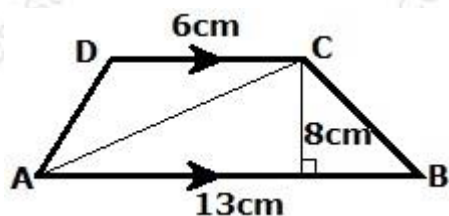
- A. a quadrilateral
- B. a triangle

- C. a circle
- D. a cylinder
- E. an octagon

5. The area of a rectangle is  $32\text{cm}^2$  and one side is  $8\text{cm}$  in length. Find its breadth and perimeter.

- A.  $7\text{cm}$ ,  $14\text{cm}$
- B.  $8\text{cm}$ ,  $16\text{cm}$
- C.  $4\text{cm}$ ,  $24\text{cm}$
- D.  $6\text{cm}$ ,  $12\text{cm}$

6. Calculate the area of the trapezium ABCD in the diagram drawn.



- A.  $38\text{cm}^2$
- B.  $24\text{cm}^2$
- C.  $52\text{cm}^2$
- D.  $76\text{cm}^2$

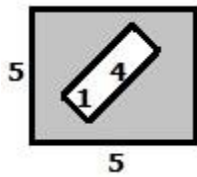
7. Find the area of a classroom that measures  $40\text{m}$  by  $50\text{m}$ .

- A.  $2,000\text{m}^2$
- B.  $20,000\text{m}^2$
- C.  $2,000\text{m}^2$
- D.  $20,000\text{m}^2$
- E.  $200\text{m}^2$

8. How many  $\text{m}^2$  of floor are there in a room 6 metres square?

- A. 36
- B. 54
- C. 28
- D. 14

9. Calculate the shaded area in the figure shown.

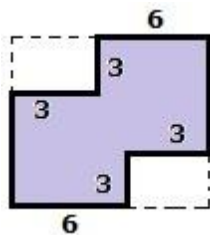


- A.  $20\text{m}^2$
- B.  $25\text{m}^2$
- C.  $21\text{m}^2$
- D.  $38\text{m}^2$

10. In a dining hall  $25\text{m}$  by  $12\text{m}$ , an area  $8\text{m}$  square is kept clear for cooking. What area is left over for dining?

- A.  $300\text{m}^2$
- B.  $64\text{m}^2$
- C.  $236\text{m}^2$
- D.  $364\text{m}^2$

11. Calculate the shaded area in the figure shown.



- A.  $18\text{m}^2$



- B.  $36\text{m}^2$
- C.  $81\text{m}^2$
- D.  $63\text{m}^2$

12. A roll of cloth contains  $56\text{m}^2$  of material. The cloth is  $\frac{1}{2}$  m wide. How long is the roll?

- A. 112m
- B. 28m
- C. 153m
- D. 56m

13. A cuboid is a solid figure bounded by \_\_\_\_ rectangular faces.

- A. 4
- B. 6
- C. 8
- D. 10
- E. 12

14. \_\_\_\_\_ is not a regular polygon.

- A. Equilateral triangle
- B. Square
- C. Regular hexagon
- D. Regular pentagon
- E. Obtuse angle

## TOPIC: EVERYDAY ARITHMETIC

**DIRECTION:** Choose the correct answer from the lettered options.

1. From the figure shown, determine how much you would save by buying a chicken from the Market instead of Quality Stores.

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. ₦250
- B. ₦320
- C. ₦70
- D. ₦115

2. From the figure shown, where does a pencil cost the most?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦38          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. Market
- B. Super Savers
- C. Quality Stores
- D. None of the above

3. From the figure shown, what is the cost of tomatoes at Quality stores?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦38          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. ₦99

- B. ₦70  
C. ₦45  
D. ₦60

4. A car goes 160km in 2hrs. Calculate its rate in km/hr.

- A. 40km/hr  
B. 80km/hr  
C. 10km/hr  
D. 4km/hr  
E. 5km/hr

5. From the figure shown, determine how many packets of tea you can buy for the cost of one tin of beverage at the Market?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. 3 packets  
B. 5 packets  
C.  $2\frac{1}{2}$  packets  
D. 7 packets

6. From the figure shown, where does beverage cost the least?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. Quality stores
- B. Market
- C. Super Savers
- D. None of the above

7. How much will the shopping list shown below cost if you buy each item from the place where it is cheapest?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |



2 loaves of bread

1 tin of margarine

1 tin of sardine

1 chicken

1 packet of tea

A. ₦350

B. ₦445

C. ₦625

D. ₦720

8. From the figure shown, which foodstuffs are cheapest at Super Savers?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

A. Chicken

B. Margarine

C. Sardines

D. Beverage

9. Solve the inequality  $X - 2 < 3$ .

- A.  $X > 3$
- B.  $X < 5$
- C.  $X < 3$
- D.  $X > 2$
- E.  $X \geq 5$

10. Here is a shopping list;

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

2 loaves of bread

1 tin of margarine

1 tin of sardine

1 chicken

1 packet of tea

How much does the shopping cost at Super Savers?

- A. ₦525
- B. ₦710
- C. ₦338
- D. ₦633

11. A man has ₦1,000 to spend, how much money would he have left if he bought a school bag, an umbrella and a shoe from Quality Stores?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. ₦650
- B. ₦110
- C. ₦490
- D. ₦890

12. From the figure shown, which foodstuff generally costs the most?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |



- A. Tomatoes
- B. Margarine
- C. Beverage
- D. Chicken

13. 1 hour 30 minutes = ?

- A. 1,800 seconds
- B. 3,600 seconds
- C. 5,400 seconds
- D. 7,200 seconds
- E. 90 seconds

**TOPIC: LARGE AND SMALL NUMBERS*****DIRECTION: Choose the correct answer from the lettered options.***

1. Write 350 millionths as a decimal.

- A. 0.0035
- B. 0.35
- C. 0.0035
- D. 0.00035

2. Write 29 thousandths as a decimal.

- A. 0.0029
- B. 0.029
- C. 0.000029
- D. 0.00029

3. What is the correct name for a million million?

- A. Thousand
- B. Million
- C. Billion
- D. Trillion

4. Express ₦4,000,000 as a mixture of digits and words.

- A. ₦4 billion
- B. ₦4 million
- C. ₦40 billion
- D. ₦4 thousand

5. A number is multiplied by itself and the product is 169. Find the number.

- A. 10
- B. 11
- C. 13
- D. 15
- E. 17

6. Express the following numbers in digits ₦3 billion.

- A. ₦3,000,000
- B. ₦3,000,000,000
- C. ₦300,000,000
- D. ₦300,000

7. A library has about 400 books, each book has about 250 pages. Approximately how many pages are there in the library?

- A. 20,000 pages
- B. 1,000,000 pages
- C. 100,000 pages
- D. 200,000 pages

8. Express 0.0062 in standard form.

- A.  $62 \times 10^3$
- B.  $6.2 \times 10^{-3}$
- C.  $0.6 \times 10^{-3}$
- D.  $0.62 \times 10^2$
- E.  $6.2 \times 10^{-2}$

9. What is the correct name for a thousand million?

- A. A trillion
- B. A billion
- C. A thousand
- D. A million

10. Express the following numbers in digits ₦2 million.

- A. ₦2000000
- B. ₦20000
- C. ₦2000
- D. ₦2

11. Find the product of 2, 3 and 6.

- A. 30
- B. 11
- C. 36
- D. 48
- E. 18

12. Express 250,000,000 as a mixture of digits and words.

- A. 250 billion
- B. 25 billion
- C. 250 million
- D. 25 million

13. Write 43,000 in standard form?

A.  $43.0 \times 10^2$

B.  $4.3 \times 10^4$

C.  $43.0 \times 10^4$

D.  $4.3 \times 10^2$

E.  $4.3 \times 10^3$

## TOPIC: NUMBER BASE

**DIRECTION:** Choose the correct answer from the lettered options.

1. Expand  $1001_2$ .

- A.  $1 \times 2^3 + 0 \times 2^5 + 0 \times 2^1 + 1 \times 1$
- B.  $1 \times 2^4 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 1$
- C.  $1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 1$
- D.  $1 \times 2^3 + 0 \times 2^2 + 0 \times 2^2 + 1 \times 1$

2. Convert 26 to binary.

- A.  $110101_2$
- B.  $110010_2$
- C.  $11010_2$
- D.  $110_2$

The correct answer is option [C]

|           |          |               |
|-----------|----------|---------------|
| <b>26</b> | <b>2</b> | <b>13 r 0</b> |
| <b>13</b> | <b>2</b> | <b>6 r 1</b>  |
| <b>6</b>  | <b>2</b> | <b>3 r 0</b>  |
| <b>3</b>  | <b>2</b> | <b>1 r 1</b>  |
| <b>1</b>  | <b>1</b> | <b>0 r 1</b>  |

**$26_{10} = 11010_2$**

3. Convert  $100011_2$  to a base 10 number.

- A. 35
- B. 45
- C. 55
- D. 60

4. Convert  $10101_2$  to base ten.

- A. 21
- B. 31
- C. 50
- D. 10

5. Convert  $35_{10}$  to a base two number.

- A.  $1001_2$
- B.  $101_2$
- C.  $100011_2$
- D.  $111_2$

6. Convert  $111000_2$  to base ten.

- A. 50
- B. 60
- C. 56
- D. 36

7. Calculate the following  $101_2 \times 11_2$ .

- A.  $111_2$
- B.  $1001_2$
- C.  $0111_2$
- D.  $1111_2$

8. Expand  $250_6$ .

- A.  $2 \times 6^2 + 5 \times 6^1 + 0 \times 1$
- B.  $2 \times 6^3 + 5 \times 6^2 + 0 \times 1$
- C.  $2 \times 6^3 + 5 \times 6^1 + 0 \times 2$
- D.  $2 \times 6^2 + 5 \times 6^3 + 0 \times 1$

9. Subtract the following in base two  $1110_2 - 1001_2$ .

- A.  $101_2$
- B.  $001_2$
- C.  $111_2$
- D.  $100001_2$

10. Add the following  $1011_2 + 1101_2$ .

- A.  $111110_2$
- B.  $11000_2$
- C.  $1110_2$
- D.  $111_2$

11. Convert  $17_8$  to denary number.

- A.  $15_{10}$
- B.  $13_{10}$
- C.  $14_{10}$
- D.  $12_{10}$
- E.  $11_{10}$



**TOPIC: PROBABILITY**

***DIRECTION: Choose the correct answer from the lettered options.***

1. A bag contains 4 red balls, 6 black balls and 2 white balls. Find the probability that a ball picked at random will be a black ball.

- A.  $\frac{1}{2}$
- B.  $\frac{1}{4}$
- C.  $\frac{1}{3}$
- D.  $\frac{1}{15}$
- E.  $\frac{1}{6}$

**TOPIC: S. I. UNITS*****DIRECTION: Choose the correct answer from the lettered options.***

1. Express 3.85km in metres.

- A. 3,850 metres
- B. 3,8500 metres
- C. 385 metres
- D. 38.5 metres

2. The litre is the basic unit of \_\_\_\_\_.

- A. area
- B. period
- C. water
- D. kerosene
- E. capacity

3. 1 millilitre = 1 \_\_\_\_\_.

- A.  $\text{cm}^3$
- B.  $\text{cm}^2$
- C.  $\text{dm}^3$
- D.  $\text{dm}^2$
- E. mm

4. Express 5000 m in kilometres.

- A. 500 km
- B. 50 km
- C. 5 km
- D. 0.5 km

5. How many seconds are in  $\frac{1}{4}$  hours?

- A. 900 seconds
- B. 1000 seconds
- C. 650 seconds
- D. 700 seconds

6. Express 458 cm in metres.

- A. 4.58 m
- B. 458 m
- C. 45.8m
- D. 0.458m

7. The symbol  $\propto$  means \_\_\_\_\_.

- A. equivalent to
- B. proportional to
- C. alpha
- D. approximately
- E. equal to

8. Convert 1 hectometre to metre.

- A. 1000m
- B. 100m
- C. 10m
- D. 1m
- E. 0.1m

9. Convert 0.01 Km to metres.

- A. 1000m
- B. 100m
- C. 10m
- D. 1m
- E. 0.1m

10. 10,000 kobo =?

- A. ₦1
- B. ₦10
- C. ₦100
- D. ₦1, 000
- E. ₦10, 000

11. Express 10.4km in metres.

- A. 1,040 metres
- B. 1,400 metres
- C. 1,0400 metres
- D. 104 metres

12. Express 6km in metres.

- A. 6000 metres
- B. 600 metres
- C. 0.06 metres
- D. 60 metres
- E. 60,000 metres

13. Express 3km in metres.

- A. 3 metres
- B. 3,000 metres
- C. 300 metres
- D. 30 metres

14. The square metre is the basic unit of \_\_\_\_\_.

- A. length
- B. mass
- C. volume
- D. area
- E. capacity

15. Express 1000mm in metres

- A. 0.1m
- B. 100m
- C. 1m
- D. 10m

16. Express 173 cm in metres.

- A. 1.73 m
- B. 17.3 m
- C. 173 m
- D. 0.173 m

17. Add the following and give the answer in kg; 574g, 1.706kg and 605g.

- A. 0.65 kg
- B. 0.574 kg

C. 2.885 kg

D. 3.287 kg

18. Express 10km in metres.

A. 10000metres

B. 1000metres

C. 100metres

D. 10metres

19. 7.5km =?

A.  $7.5 \times 10^3\text{m}$

B.  $7.5 \times 10^{-3}\text{km}$

C.  $75 \times 10^{-3}\text{km}$

D.  $75 \times 10^3\text{m}$

E. 7.5000m

20. The SI unit for length is \_\_\_\_\_.

A. kilogramme (kg)

B. metre square ( $\text{m}^2$ )

C. metre cube ( $\text{m}^3$ )

D. second

E. metre (m)

**TOPIC: SOLVING EQUATIONS*****DIRECTION: Choose the correct answer from the lettered options.***1. Factorise the expression  $a^2 - b^2$ .

- A.  $(a + b^2)(a^2 + b)$
- B.  $(a + b)(a - b)$
- C.  $(a - b)(a - b)$
- D.  $(b^2 + a^2)(a^2 - b^2)$
- E.  $(a + b)(a + b)$

2. Solve for X in  $X^2 + 6X - 7 = 0$ .

- A. -1, -7
- B. -1, -6
- C. -1, 7
- D. 1, -7
- E. 1, 7

3. Simplify  $^{-18}/_{-6}$ .

- A. 3
- B. -3
- C. -6
- D. 6
- E. 24

4. Sum of the interior angles of a triangle is equal to \_\_\_\_\_.

- A.  $300^\circ$
- B.  $90^\circ$
- C.  $180^\circ$

D.  $360^\circ$

E.  $270^\circ$

5. If  $y = 3 - X$ , find the value of  $y$  when  $X = 1$ .

A. 3

B. 1

C. 4

D. 2

E. 5

6. Simplify  $^{22 \times 10}_7 + ^{22 \times 4}_7$ .

A. 44

B. 22

C. 14

D. 7

E. 12

7. Find the value of  $X$  in the equation  $^X_3 = 5$ .

A. 13

B. 15

C. 8

D. 2

E. 7

8. Simplify  $3(X - 2y) - 4(X - 5y)$ .

A.  $14y - X$

B.  $14X + y$

C.  $26X - y$



D.  $7X - 26y$

E.  $26X + y$

9. The product of 3 numbers is 0.84; if two of the numbers are 0.7 and 0.2, find the third number.

A. 0.02

B. 0.06

C. 6.0

D. 2.0

E. 0.17

10. Factorise the expression  $4am^2 - 6am$ .

A.  $2a(2m - 3a)$

B.  $2am(2 + 3am)$

C.  $2am(2m - 3)$

D.  $2am(2a + 3m)$

E.  $m(2a + 3m)$

11. Find the area of a circle of radius 1m.

A.  $4m^2$

B.  $3.14m^2$

C.  $2.14m^2$

D.  $4.14m^2$

E.  $3.41m^2$

12. Simplify  $X^5 \times X^2$ .

A.  $X^3$

B.  $X^7$

C.  $X^{10}$

D.  $X^2$

E.  $X^{2\frac{1}{2}}$

13. Express 90% as a common fraction in its lowest term.

A.  $\frac{8}{10}$

B.  $\frac{10}{8}$

C.  $\frac{10}{9}$

D.  $\frac{9}{10}$

E.  $\frac{3}{5}$

14. Solve graphically  $3X - y = -1$ ,  $X - 3y = 9$ .

A.  $x = 1.5$ ,  $y = -3.5$

B.  $x = 1.5$ ,  $y = 3.5$

C.  $x = 3.5$ ,  $y = 1.5$

D.  $x = -1.5$ ,  $y = -3.5$

E.  $x = -1.5$ ,  $y = 3.5$

**TOPIC: STATISTICS**

**DIRECTION:** Choose the correct answer from the lettered options.

1. Find in this order the mode, median and mean of the following set of numbers 7, 5, 11, 7, 12, 8, 6, 9, 7.

- A. 7, 7, 8
- B. 8, 8, 7
- C. 7, 8, 7
- D. 7, 7, 7

2. Calculate the mean of the following numbers 9, 11, 13.

- A. 11
- B. 13
- C. 9
- D. 12

3. Find the median of the following set of numbers 3, 1, 6, 4, 2, 5, 5.

- A. 5
- B. 6
- C. 4
- D. 2

4. Find in this order the mode, median and mean of the following set of numbers 4, 8, 11, 11, 12, 12, 12.

- A. 1, 11, 15
- B. 10, 12, 11
- C. 10, 9, 12
- D. 12, 11, 10

5. Find in this order, the mode, median and mean of the following set of numbers 4, 5, 5, 7, 8, 10.

- A. 7, 6, 6, 5
- B. 6, 7, 6, 5
- C. 5, 6, 6, 5
- D. 4, 6, 5, 6

6. A street trader's profit after five days of trading was ₦6385. Calculate the mean profit per day.

- A. ₦1,700
- B. ₦1,500
- C. ₦1,300
- D. ₦1,277

7. Calculate the mean of the following numbers 3.9kg, 5.2kg, and 5.3kg.

- A. 3.9kg
- B. 4.8kg
- C. 5.2kg
- D. 4.0kg

8. Find the mode of the following set of numbers 15, 14, 13, 11, 15, 14, 16, 15, 14, 14.

- A. 16
- B. 14
- C. 15
- D. 11

9. Calculate the mean of the following numbers 5, 12, 3, 9, 10, 3.

- A. 3
- B. 9
- C. 42
- D. 7

10. Find the median of the following set of numbers 4, 8, 9, 12, 5, 7, 3, 4.

- A. 6
- B. 12
- C. 9
- D. 8

11. Find the mode of the set of numbers: 2, 3, 6, 2, 6, 7, 6.

- A. 2
- B. 6
- C. 3
- D. 7
- E. 5

# ANSWERS

**TOPIC: ALGEBRA*****DIRECTION: Choose the correct answer from the lettered options.***

1. Simplify  $2b + (3b - 4c)$ .

- A.  $5b - 4c$
- B.  $6b^2 - 8bc$
- C.  $2b - 7bc$
- D.  $8b + 3c$

The correct answer is option [A]

$$\begin{aligned}2b + (3b - 4c) &= 2b + 3b - 4c \\ &= 5b - 4c\end{aligned}$$

2. Simplify  $3b \times 11ab$ .

- A.  $11/3ab^2$
- B.  $11ab$
- C.  $33ab^2$
- D.  $14ab$

The correct answer is option [C]

$$\begin{aligned}3b \times 11ab &= 3 \times b \times 11 \times a \times b \\ &= 3 \times b \times 11 \times a \times b \\ &= 3 \times 11 \times a \times b^2 \\ &= 33ab^2\end{aligned}$$

3. Simplify  $30pq \div 6$ .

- A.  $5pq$
- B.  $15pq$
- C.  $35pq$
- D.  $12pq$

The correct answer is option [A]

$$\begin{aligned}
 &30pq \div 6 \\
 &= 30 \times p \times q / 6 \\
 &= 5 \times p \times q / 1 \\
 &= 5pq / 1 \\
 &= 5pq
 \end{aligned}$$

4. Simplify  $3b \times 11ab$ .

- A.  $11/3ab^2$
- B.  $11ab$
- C.  $33ab^2$
- D.  $14ab$

The correct answer is option [C]

$$\begin{aligned}
 3b \times 11ab &= 3 \times b \times 11 \times a \times b \\
 &= 3 \times b \times 11 \times a \times b \\
 &= 3 \times 11 \times a \times b^2 \\
 &= 33ab^2
 \end{aligned}$$

5. Simplify  $2xy \times 9y$ .

- A.  $41/2 xy^2$
- B.  $18xy^2$
- C.  $9xy$
- D.  $11xy^2$

The correct answer is option [B]

$$\begin{aligned}
 2xy \times 9y &= 2 \times x \times y \times 9 \times y \\
 &= 2 \times 9 \times x \times y \times y \\
 &= 18 \times x \times y^2 \\
 &= 18xy^2
 \end{aligned}$$



6. Simplify  $7g + (3g + 4h)$ .

A.  $21g^2 + 7h$

B.  $7g + 7h$

C.  $10g + 4h$

D.  $10g + 11h$

The correct answer is option [C]

$$7g + (3g + 4h) = 7g + 3g + 4h$$

$$= 10g + 4h$$

7. Simplify  $7a \times 2 + 5 \times 8a - 6a \times 9$ .

A.  $14a$

B.  $10a$

C.  $40a$

D.  $0$

The correct answer is option [D]

$$7a \times 2 + 5 \times 8a$$

$$- 6a \times 9 = (7a \times 2) + (5 \times 8a) - (6a \times 9)$$

$$= 14a + 40a - 54a$$

$$= 54a - 54a$$

$$= 0$$

8. Find the value of  $16 \times 2 - 3 + 14 \div 7$ .

A. 32

B. 42

C. 14

D. 31

The correct answer is option [D]

$$16 \times 2 - 3 + 14 \div 7$$

$$\begin{aligned}
 &= (16 \times 2) - 3 + (14 \div 7) \\
 &= 32 - 3 + 2 \\
 &= 34 - 3 \\
 &= 31
 \end{aligned}$$

9. Simplify  $48x^2y/12xy$ .

- A.  $6x$
- B.  $4x$
- C.  $14x$
- D.  $6xy$

The correct answer is option [B]

$$48x^2y/12xy$$

$$\begin{aligned}
 &= 4 \times x \times x \times \frac{y}{1} \times x \times y \\
 &= 4 \times x \times 1 \times \frac{1}{1} \times 1 \times 1 \\
 &= 4x_{/1} \\
 &= 4x
 \end{aligned}$$

10. Simplify  $2b + (3b - 4c)$ .

- A.  $5b - 4c$
- B.  $6b^2 - 8bc$
- C.  $2b - 7bc$
- D.  $8b + 3c$

The correct answer is option [A]

$$\begin{aligned}
 2b + (3b - 4c) &= 2b + 3b - 4c \\
 &= 5b - 4c
 \end{aligned}$$

11. Simplify  $8v \times 2 + 5v \div 5 - 12v$ .

- A.  $16v$
- B.  $5v$
- C.  $60v$
- D.  $4v$

The correct answer is option [B]

$$8v \times 2 + 5v \div 5$$

$$- 12v = (8v \times 2) + (5v \div 5) - 12v$$

$$= 16v + v - 12v$$

$$= 17v - 12v$$

$$= 5v$$

12. Find the value of  $16 \times 2 - 3 + 14 \div 7$ .

- A. 32
- B. 42
- C. 14
- D. 31

The correct answer is option [D]

$$16 \times 2 - 3 + 14 \div 7$$

$$= (16 \times 2) - 3 + 14 \div 7$$

$$= 32 - 3 + 2$$

$$= 34 - 3$$

$$= 31$$

13. Simplify  $2xy \times 9y$ .

- A.  $4\frac{1}{2}xy^2$
- B.  $18xy^2$

- C.  $9xy$
- D.  $11xy^2$

The correct answer is option [B]

$$\begin{aligned}2xy \times 9y &= 2 \times x \times y \times 9 \times y \\&= 2 \times 9 \times x \times y \times y \\&= 18 \times x \times y^2 \\&= 18xy^2\end{aligned}$$

14. Write the following without brackets;  $(6a - b) + (c - 4d)$ .

- A.  $2a - b + c - 4d$
- B.  $6a + b + c - 2d$
- C.  $6a - b + c - 4d$
- D.  $4a - b + c - 2d$

The correct answer is option [C]

$$(6a - b) + (c - 4d) = 6a - b + c - 4d$$

15. Simplify  $7g + (3g + 4h)$ .

- A.  $21g^2 + 7h$
- B.  $7g + 7h$
- C.  $10g + 4h$
- D.  $10g + 11h$

The correct answer is option [C]

$$\begin{aligned}7g + (3g + 4h) &= 7g + 3g + 4h \\&= 10g + 4h\end{aligned}$$

16. Remove brackets from  $5(4x - r) - 7(2x - 3r)$ .

- A.  $4x + 9r$
- B.  $3x - 25r$
- C.  $5x + 11r$
- D.  $6x + 16r$
- E.  $2x + 7r$

The correct answer is option [D]

Solution

$$20x - 5r - 14x + 21r \quad [\text{Arranging like terms together}]$$

$$20x - 14x + 21r - 5r$$

$$\therefore 6x + 16r$$

## TOPIC: ANGLES

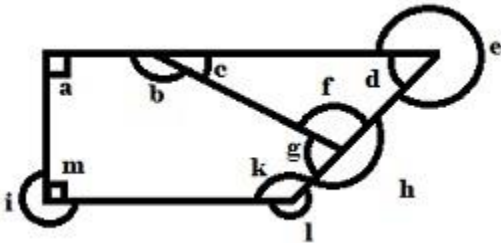
**DIRECTION:** Choose the correct answer from the lettered options.

1. A seven-sided polygon is called \_\_\_\_\_

- A. a triangle  
B. a heptagon  
C. a decagon  
D. an octagon  
E. a hexagon

The correct answer is option [B]

2. In the figure shown, c is \_\_\_\_\_ angle.

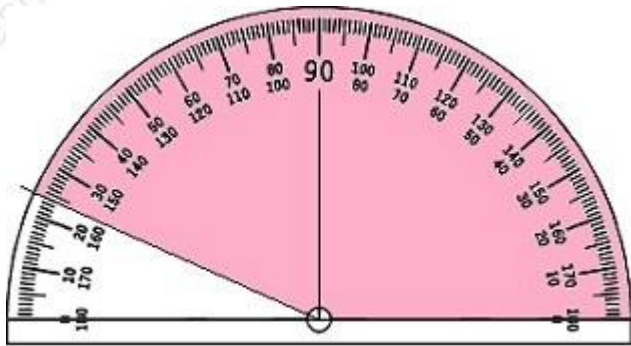


- A. a reflex  
B. a right  
C. an acute  
D. an obtuse

The correct answer is option [C]

An acute angle is less than  $90^\circ$ .

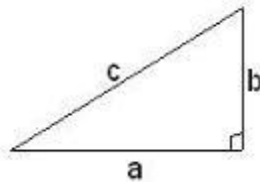
3. Read off the size of the angle in the protractor shown.



- A.  $180^\circ$
- B.  $50^\circ$
- C.  $156^\circ$
- D.  $25^\circ$

The correct answer is option [C]

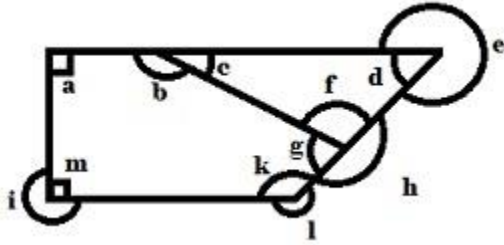
4. In the diagram below, which one of the following equation gives the value of  $a^2$ ?



- A.  $a^2 = b^2 - c^2$
- B.  $a^2 = b^2 + c^2$
- C.  $a^2 = (c - b)^2$
- D.  $a^2 = (b - c)^2$
- E.  $a^2 = c^2 - b^2$

The correct answer is option [E]

5. In the figure shown, b is \_\_\_\_\_ angle.

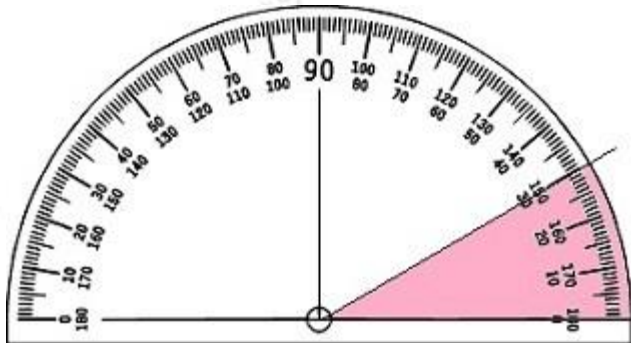


- A. an obtuse
- B. a reflex
- C. an acute
- D. a right

The correct answer is option [A]

An obtuse angle is greater than  $90^\circ$  but less than  $180^\circ$ .

6. Read off the size of the angle in the protractor shown.

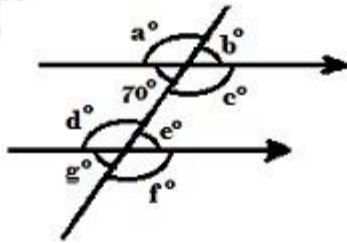


- A.  $30^\circ$
- B.  $150^\circ$
- C.  $80^\circ$
- D.  $60^\circ$

The correct answer is option [A]



7. Find the size of  $c^\circ$  in the diagram drawn.

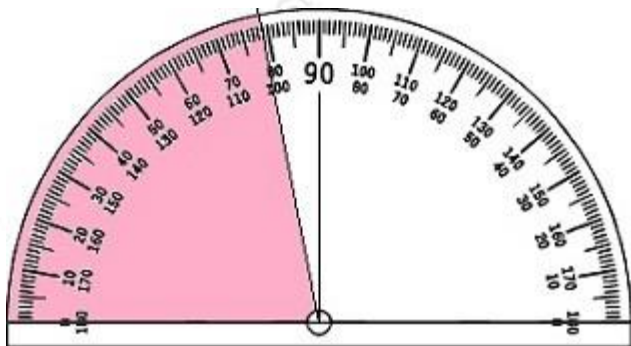


- A.  $35^\circ$
- B.  $110^\circ$
- C.  $70^\circ$
- D.  $20^\circ$

The correct answer is option [B]

$$c^\circ = 180^\circ - 70^\circ = 110^\circ \text{ (angles on a straight line are equal to } 180^\circ\text{)}$$

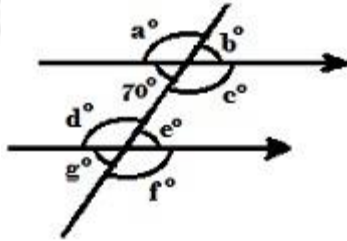
8. Read off the size of the angle in the protractor shown.



- A.  $100^\circ$
- B.  $110^\circ$
- C.  $20^\circ$
- D.  $79^\circ$

The correct answer is option [D]

9. Find the size of  $b^\circ$  in the diagram drawn.

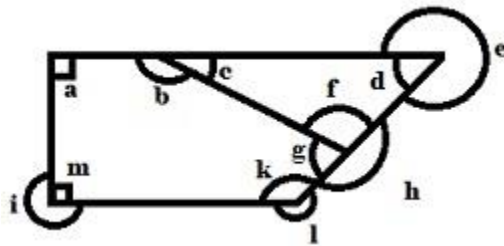


- A.  $70^\circ$
- B.  $110^\circ$
- C.  $35^\circ$
- D.  $20^\circ$

The correct answer is option [A]

$b^\circ = 70^\circ$  (vertically opposite angles are equal)

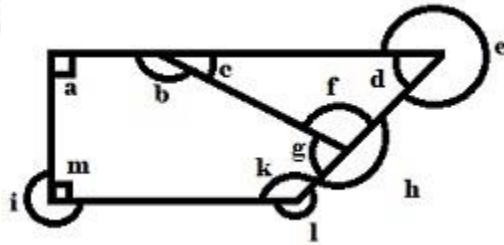
10. In the diagram drawn, a is \_\_\_\_\_ angle.



- A. an obtuse
- B. an acute
- C. a reflex
- D. a right

The correct answer is option [D]

11. In the figure shown, e is \_\_\_\_\_ angle.

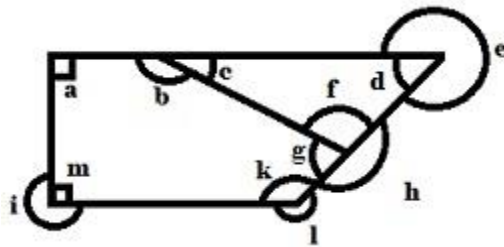


- A. an acute
- B. an obtuse
- C. a straight line
- D. a reflex

The correct answer is option [D]

Reflex angle is greater than  $180^\circ$  but less than  $360^\circ$ .

12. In the figure shown, h is \_\_\_\_\_ angle.



- A. a straight line
- B. an acute
- C. an obtuse
- D. a reflex

The correct answer is option [A]

13. A triangle has sides of  $X$ cm,  $(X + 4)$  cm and 11cm. If the perimeter of the triangle is less than 30cm, find the possible values of  $X$ .

A.  $X < 7$  or  $X > 3\frac{1}{2}$

B.  $X > 7$  or  $X < -3\frac{1}{2}$

C.  $X < 7\frac{1}{2}$  or  $X > 3\frac{1}{2}$

D.  $X > 7\frac{1}{2}$  or  $X > 3\frac{1}{2}$

E.  $X < -7$  or  $X > -3\frac{1}{2}$

The correct answer is option [C]

Solution

$$\text{Perimeter of the triangle} = X + (X + 4) + 11$$

$$\text{Thus } X + (X + 4) + 11 < 30$$

$$2X + 15 < 30$$

Take like terms

$$2X < 30 - 15$$

$$2X < 15$$

Divide both sides by 2

$$X < 7\frac{1}{2}$$

Also, in the triangle, the sum of the lengths of the two sides must be greater than the length of the third side.

$$\text{Thus } X + (X + 4) > 11$$

$$2X + 4 > 11$$

$$2X > 11 - 4$$

$$2X > 7$$

Divide both sides by 2

$$X > 3\frac{1}{2}$$

## TOPIC: AREA OF SHAPES

**DIRECTION: Choose the correct answer from the lettered options.**

1. A board measures  $2\frac{1}{2}$  m by  $1\frac{1}{4}$  m and costs ₦250. Calculate the cost of  $1\text{m}^2$  of the board.

- A. ₦500
- B. ₦125
- C. ₦1000
- D. ₦80

The correct answer is option [D]

The area of the board =  $2\frac{1}{2} \text{ m} \times 1\frac{1}{4} \text{ m} = L \times B$

$$= \frac{5}{2} \text{ m} \times \frac{5}{4} = \frac{25}{8} \text{ m}^2 = \frac{25}{8} \text{ m}^2$$

costs ₦250

$$= 1\text{m}^2 \text{ will cost } (\text{₦}250 \times 8) / 25 = 10 \times 8$$

$$= \text{₦}80$$

2. A floor 4m long and  $3\frac{1}{2}$  m wide is to be concreted. Find the cost, if concrete costs ₦12,000 per  $\text{m}^2$ .

- A. ₦146,000
- B. ₦168,000
- C. ₦420,000
- D. ₦160,000

The correct answer is option [B]

$$\text{Area of floor} = 4\text{m} \times 3\frac{1}{2} \text{ m}$$

$$= 4\text{m} \times \frac{7}{2}\text{m}$$

$$= 2\text{m} \times 7\text{m} = 14\text{m}^2$$

$$\therefore \text{The cost of the concrete} = \text{₦}12,000/\text{m}^2 \times 14\text{m}^2$$

$$= \text{₦}12,000/1 \times 14 \times 1$$

$$= \text{₦}12,000 \times 14 = \text{₦}168,000$$

3. A school assembly area is in the shape of a 25m by 25m square. A part of the area is a concrete rectangle 20m by 3m, the rest is grass. Calculate the area of the grass.

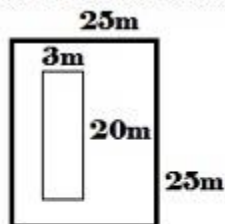
A.  $685\text{m}^2$

B.  $500\text{m}^2$

C.  $565\text{m}^2$

D.  $515\text{m}^2$

The correct answer is option [C]



$$\text{Area of assembly area} = (25\text{m})^2 = 625\text{m}^2$$

$$\text{Area of concrete} = 20\text{m} \times 3\text{m} = 60\text{m}^2$$

$$\begin{aligned} \text{Area of grass} &= 625\text{m}^2 - 60\text{m}^2 \\ &= 565\text{m}^2 \end{aligned}$$

4. A four sided plane shape is called \_\_\_\_\_.

A. a quadrilateral

B. a triangle

C. a circle

D. a cylinder

E. an octagon

The correct answer is option [A]

5. The area of a rectangle is  $32\text{cm}^2$  and one side is  $8\text{cm}$  in length. Find its breadth and perimeter.

- A.  $7\text{cm}$ ,  $14\text{cm}$
- B.  $8\text{cm}$ ,  $16\text{cm}$
- C.  $4\text{cm}$ ,  $24\text{cm}$
- D.  $6\text{cm}$ ,  $12\text{cm}$

The correct answer is option [C]

$$\text{Area} = L \times B$$

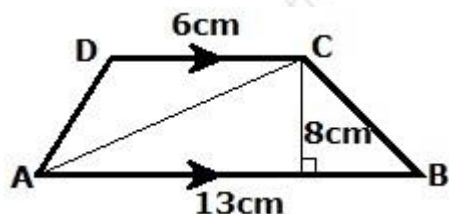
$$32 = 8 \times B$$

$$B = 32\text{cm}^2 / 8\text{cm} = 4\text{cm}$$

$$\text{Perimeter} = 2(L + B) = 2(8 + 4)$$

$$2 \times 12 = 24\text{cm}$$

6. Calculate the area of the trapezium ABCD in the diagram drawn.



- A.  $38\text{cm}^2$
- B.  $24\text{cm}^2$
- C.  $52\text{cm}^2$
- D.  $76\text{cm}^2$

The correct answer is option [D]

The diagonal line AC divides the trapezium into 2 triangles.

Each triangle has a height of  $8\text{cm}$ .

$$\text{Area of } \triangle ACB = \frac{1}{2} \times 13\text{cm} \times 8\text{cm} = 52\text{cm}^2$$

$$\text{Area of } \triangle ACD = \frac{1}{2} \times 6\text{cm} \times 8\text{cm}$$

$$= 24\text{cm}^2$$

$$\therefore \text{Area of trapezium} = 52\text{cm}^2 + 24\text{cm}^2 = 76\text{cm}^2$$

7. Find the area of a classroom that measures 40m by 50m.

- A. 2,000m<sup>2</sup>
- B. 20,000m<sup>2</sup>
- C. 2,000m<sup>2</sup>
- D. 20,000m<sup>2</sup>
- E. 200m<sup>2</sup>

The correct answer is option [A]

Solution

Area of a class 40m by 50m

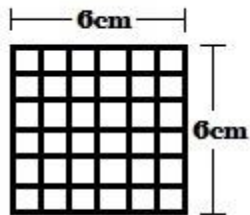
$40 \times 50$

$2,000\text{m}^2$

8. How many m<sup>2</sup> of floor are there in a room 6 metres square?

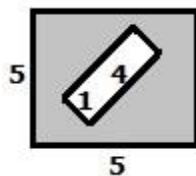
- A. 36
- B. 54
- C. 28
- D. 14

The correct answer is option [A]



**By counting the number of squares, we have 36m<sup>2</sup> of floor.**

9. Calculate the shaded area in the figure shown.



- A. 20m<sup>2</sup>



B.  $25\text{m}^2$

C.  $21\text{m}^2$

D.  $38\text{m}^2$

The correct answer is option [C]

The area of the shaded area = The total area - The area of the unshaded

Total area =  $5\text{m} \times 5\text{m} = 25\text{m}^2$

Area of unshaded =  $4\text{m} \times 1\text{m} = 4\text{m}^2$

$\therefore$  Shaded area =  $25\text{m}^2 - 4\text{m}^2$

=  $21\text{m}^2$

10. In a dining hall 25m by 12m, an area 8m square is kept clear for cooking. What area is left over for dining?

A.  $300\text{m}^2$

B.  $64\text{m}^2$

C.  $236\text{m}^2$

D.  $364\text{m}^2$

The correct answer is option [C]

Total area of dining hall =  $25\text{m} \times 12\text{m} = 300\text{m}^2$

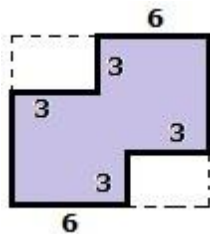
Area kept for cooking =  $8\text{m} \times 8\text{m} = 64\text{m}^2$

$\therefore$  Area left over for dining = Total area of dining hall - Area kept for cooking

=  $300\text{m}^2 - 64\text{m}^2$

=  $236\text{m}^2$

11. Calculate the shaded area in the figure shown.



A.  $18\text{m}^2$

B.  $36\text{m}^2$

C.  $81\text{m}^2$

D.  $63\text{m}^2$

The correct answer is option [D]

The area of the shaded area = The total area - The area of the unshaded

$$\text{Total area} = 9\text{m} \times 9\text{m} = 81\text{m}^2$$

$$\text{Area of unshaded} = 2(3\text{m} \times 3\text{m}) = 18\text{m}^2$$

$$\therefore \text{Shaded area} = 81\text{m}^2 - 18\text{m}^2$$

$$= 63\text{m}^2$$

12. A roll of cloth contains  $56\text{m}^2$  of material. The cloth is  $\frac{1}{2}$  m wide. How long is the roll?

A.  $112\text{m}$

B.  $28\text{m}$

C.  $153\text{m}$

D.  $56\text{m}$

The correct answer is option [A]

$$\text{The area of the roll of cloth} = 56\text{m}^2 = L \times B$$

$$56\text{m}^2 = L \times \frac{1}{2} \text{ m}$$

$$L = 56\text{m}^2 \times \frac{2}{1 \text{ m}}$$

$$= 56\text{m} \times \frac{2}{1}$$

$$= 112\text{m}$$

13. A cuboid is a solid figure bounded by \_\_\_\_ rectangular faces.

A. 4

B. 6

C. 8

D. 10

E. 12

The correct answer is option [B]

14. \_\_\_\_\_ is not a regular polygon.

A. Equilateral triangle

B. Square

C. Regular hexagon

D. Regular pentagon

E. Obtuse angle

**The correct Answer is Option [E]**

A regular Polygon has all its sides of equal length and all its angles of equal size.

## TOPIC: EVERYDAY ARITHMETIC

**DIRECTION:** Choose the correct answer from the lettered options.

1. From the figure shown, determine how much you would save by buying a chicken from the Market instead of Quality Stores.

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. ₦250
- B. ₦320
- C. ₦70
- D. ₦115

The correct answer is option [C]

'Market' price of chicken = ₦250

'Quality stores' price of chicken = ₦320

∴ Amount saved = ₦320 - ₦250 = ₦70

2. From the figure shown, where does a pencil cost the most?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦38          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. Market
- B. Super Savers
- C. Quality Stores
- D. None of the above

The correct answer is option [A]

3. From the figure shown, what is the cost of tomatoes at Quality stores?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦38          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. ₦99
- B. ₦70
- C. ₦45
- D. ₦60

The correct answer is option [B]

4. A car goes 160km in 2hrs. Calculate its rate in km/hr.

- A. 40km/hr
- B. 80km/hr
- C. 10km/hr
- D. 4km/hr
- E. 5km/hr

The correct answer is option [B]

5. From the figure shown, determine how many packets of tea you can buy for the cost of one tin of beverage at the Market?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦38          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. 3 packets
- B. 5 packets



C.  $2\frac{1}{2}$  packets

D. 7 packets

The correct answer is option [C]

Cost of tea = ₦70

Cost of beverage = ₦180

∴ Number of packets of tea that can be bought at the cost of one tin of beverage =  $\frac{₦180}{₦70}$

$$= 2\frac{4}{7} \approx$$

$$2.5 \approx 2\frac{1}{2}$$

6. From the figure shown, where does beverage cost the least?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

A. Quality stores

B. Market

C. Super Savers

D. None of the above

The correct answer is option [A]

7. How much will the shopping list shown below cost if you buy each item from the place where it is cheapest?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦38          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

2 loaves of bread

1 tin of margarine

1 tin of sardine

1 chicken

1 packet of tea

A. ₦350

B. ₦445

C. ₦625

D. ₦720

The correct answer is option [B]

Cost of 2 loaves of bread @ the market =  $2 \times \text{₦}60 = \text{₦}120$

Cost of 1 tin of margarine @ super savers = ₦90

Cost of 1 tin of sardine @ super savers = ₦38

Cost of 1 chicken @ the market = ₦250

Cost of 1 packet of tea @ super savers = ₦55

Total cost of shopping = ₦120 + ₦90 + ₦38 + ₦250 + ₦55

= ₦445



8. From the figure shown, which foodstuffs are cheapest at Super Savers?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. Chicken
- B. Margarine
- C. Sardines
- D. Beverage

The correct answer is option [C]

9. Solve the inequality  $X - 2 < 3$ .

- A.  $X > 3$
- B.  $X < 5$
- C.  $X < 3$
- D.  $X > 2$
- E.  $X \geq 5$

The correct answer is option [B]

Solution.

$$X - 2 < 3$$

Adding 2 to both sides of the inequality

$$X - 2 < 3$$

$$X - 2 + 2 < 3 + 2$$

$$X < 5$$

10. Here is a shopping list;

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

2 loaves of bread

1 tin of margarine

1 tin of sardine

1 chicken

1 packet of tea

How much does the shopping cost at Super Savers?

A. ₦525

B. ₦710

C. ₦338

D. ₦633

The correct answer is option [D]

Cost of 2 loaves of bread =  $2 \times \text{₦75} = \text{₦150}$

Cost of 1 tin of margarine = ₦90

Cost of 1 tin of sardine = ₦38

Cost of 1 chicken = ₦300

Cost of 1 packet of tea = ₦55

Total cost of shopping =  $\text{₦150} + \text{₦90} + \text{₦38} + \text{₦300} + \text{₦55} = \text{₦633}$

11. A man has ₦1,000 to spend, how much money would he have left if he bought a school bag, an umbrella and a shoe from Quality Stores?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦195   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

A. ₦650

B. ₦110

C. ₦490

D. ₦890

The correct answer is option [B]

Cost of school bag = ₦250

Cost of umbrella = ₦400

Cost of shoe = ₦240

Total amount available = ₦1,000

Amount left = ₦1,000 - (₦250 + ₦400 + ₦240)

= ₦1,000 - ₦890 = ₦110

12. From the figure shown, which foodstuff generally costs the most?

| FOODSTUFFS                     | MARKET | SUPER SAVERS | QUALITY STORES |
|--------------------------------|--------|--------------|----------------|
| bread ( $\frac{1}{2}$ kg loaf) | ₦60    | ₦75          | ₦70            |
| margarine (450 g)              | ₦96    | ₦90          | ₦99            |
| sardines (100g tin)            | ₦40    | ₦35          | ₦45            |
| chicken                        | ₦250   | ₦300         | ₦320           |
| tea (pack of 25 bags)          | ₦70    | ₦55          | ₦60            |
| beverage (450g tin)            | ₦150   | ₦175         | ₦170           |
| tomatoes (1 kg)                | ₦50    | ₦60          | ₦70            |
| <b>OTHER THINGS</b>            |        |              |                |
| school bag                     | ₦185   | ₦200         | ₦250           |
| umbrella                       | ₦300   | ₦399         | ₦400           |
| shoes                          | ₦120   | ₦250         | ₦240           |
| pencil                         | ₦6     | ₦5           | ₦4             |
| notebook                       | ₦16    | ₦15          | ₦16.50         |
| food flask                     | ₦150   | ₦145         | ₦120           |

- A. Tomatoes
- B. Margarine
- C. Beverage
- D. Chicken

The correct answer is option [D]

13. 1 hour 30 minutes = ?

- A. 1,800 seconds
- B. 3,600 seconds
- C. 5,400 seconds
- D. 7,200 seconds
- E. 90 seconds

**The correct Answer is Option [C]**

1 hour = 60 minutes

1 hour 30 minutes = 90 minutes

To convert to seconds; 1 minute = 60 seconds

$$90 \times 60 = 5,400$$

**TOPIC: LARGE AND SMALL NUMBERS*****DIRECTION: Choose the correct answer from the lettered options.***

1. Write 350 millionths as a decimal.

- A. 0.0035
- B. 0.35
- C. 0.0035
- D. 0.00035

The correct answer is option [D]

$$\begin{aligned} 350 \text{ millionths} &= 1 \text{ millionth} \times 350 \\ &= 0.000001 \times 350 = 0.00035. \end{aligned}$$

2. Write 29 thousandths as a decimal.

- A. 0.0029
- B. 0.029
- C. 0.000029
- D. 0.00029

The correct answer is option [A]

$$\begin{aligned} 29 \text{ thousandths} &= 1 \text{ thousandth} \times 29 \\ &= 0.001 \times 29 = 0.0029. \end{aligned}$$

3. What is the correct name for a million million?

- A. Thousand
- B. Million
- C. Billion
- D. Trillion

The correct answer is option [D]

4. Express ₦4,000,000 as a mixture of digits and words.

- A. ₦4 billion
- B. ₦4 million
- C. ₦40 billion
- D. ₦4 thousand

The correct answer is option [B]

5. A number is multiplied by itself and the product is 169. Find the number.

- A. 10
- B. 11
- C. 13
- D. 15
- E. 17

The correct answer is option [C].

Solution:

Let no. be  $x$

$$x = \sqrt{169}$$

$$x = 13$$

6. Express the following numbers in digits ₦3 billion.

- A. ₦3,000,000
- B. ₦3,000,000,000
- C. ₦300,000,000
- D. ₦300,000

The correct answer is option [B]



7. A library has about 400 books, each book has about 250 pages. Approximately how many pages are there in the library?

- A. 20,000 pages
- B. 1,000,000 pages
- C. 100,000 pages
- D. 200,000 pages

The correct answer is option [B]

If one book = 250 pages.

4,000 will have  $250 \times 4,000 = 1,000,000$  pages.

8. Express 0.0062 in standard form.

- A.  $62 \times 10^3$
- B.  $6.2 \times 10^{-3}$
- C.  $0.6 \times 10^{-3}$
- D.  $0.62 \times 10^2$
- E.  $6.2 \times 10^{-2}$

The correct answer is option [B]

9. What is the correct name for a thousand million?

- A. A trillion
- B. A billion
- C. A thousand
- D. A million

The correct answer is option [B]

10. Express the following numbers in digits ₦2 million.

- A. ₦2000000
- B. ₦20000

C. ₦2000

D. ₦2

The correct answer is option [A]

11. Find the product of 2, 3 and 6.

A. 30

B. 11

C. 36

D. 48

E. 18

The correct answer is option [C]

12. Express 250,000,000 as a mixture of digits and words.

A. 250 billion

B. 25 billion

C. 250 million

D. 25 million

The correct answer is option [C]

13. Write 43,000 in standard form?

A.  $43.0 \times 10^2$

B.  $4.3 \times 10^4$

C.  $43.0 \times 10^4$

D.  $4.3 \times 10^2$

E.  $4.3 \times 10^3$

The correct answer is option [B]



## TOPIC: NUMBER BASE

**DIRECTION:** Choose the correct answer from the lettered options.

1. Expand  $1001_2$ .

- A.  $1 \times 2^3 + 0 \times 2^5 + 0 \times 2^1 + 1 \times 1$
- B.  $1 \times 2^4 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 1$
- C.  $1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 1$
- D.  $1 \times 2^3 + 0 \times 2^2 + 0 \times 2^2 + 1 \times 1$

The correct answer is option [C]

2. Convert 26 to binary.

- A.  $110101_2$
- B.  $110010_2$
- C.  $11010_2$
- D.  $110_2$

The correct answer is option [C]

|           |          |               |
|-----------|----------|---------------|
| <b>26</b> | <b>2</b> | <b>13 r 0</b> |
| <b>13</b> | <b>2</b> | <b>6 r 1</b>  |
| <b>6</b>  | <b>2</b> | <b>3 r 0</b>  |
| <b>3</b>  | <b>2</b> | <b>1 r 1</b>  |
| <b>1</b>  | <b>1</b> | <b>0 r 1</b>  |

$$26_{10} = 11010_2$$

3. Convert  $100011_2$  to a base 10 number.

- A. 35
- B. 45
- C. 55
- D. 60

The correct answer is option [A]

$$\begin{aligned}
 1000112 &= 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \\
 &= 32 + 0 + 0 + 0 + 2 + 1 \\
 &= 35_{10}
 \end{aligned}$$

4. Convert  $10101_2$  to base ten.

- A. 21
- B. 31
- C. 50
- D. 10

The correct answer is option [A]

$$\begin{aligned}
 10101_2 &= 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 \\
 &= 16 + 0 + 4 + 0 + 1 \\
 &= 21_{10}
 \end{aligned}$$

5. Convert  $35_{10}$  to a base two number.

- A.  $1001_2$
- B.  $101_2$
- C.  $100011_2$
- D.  $111_2$

The correct answer is option [C]

|    |   |    |   |   |
|----|---|----|---|---|
| 35 | 2 | 17 | r | 1 |
| 17 | 2 | 8  | r | 1 |
| 8  | 2 | 4  | r | 0 |
| 4  | 2 | 2  | r | 0 |
| 2  | 2 | 1  | r | 0 |
|    |   | 0  | r | 1 |

$$35_{10} = 100011_2$$

6. Convert  $111000_2$  to base ten.

- A. 50
- B. 60
- C. 56
- D. 36

The correct answer is option [C]

$$\begin{aligned} 111000_2 &= 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 \\ &= 32 + 16 + 8 + 0 + 0 + 0 \\ &= 56_{10} \end{aligned}$$

7. Calculate the following  $101_2 \times 11_2$ .

- A.  $111_2$
- B.  $1001_2$
- C.  $0111_2$
- D.  $1111_2$

**THE CORRECT ANSWER IS OPTION [D]**

$$\begin{array}{r} 101 \\ \times 11 \\ \hline 101 \\ 101 \\ \hline 1111_2 \end{array}$$

8. Expand  $250_6$ .

- A.  $2 \times 6^2 + 5 \times 6^1 + 0 \times 1$
- B.  $2 \times 6^3 + 5 \times 6^2 + 0 \times 1$
- C.  $2 \times 6^3 + 5 \times 6^1 + 0 \times 2$
- D.  $2 \times 6^2 + 5 \times 6^3 + 0 \times 1$

The correct answer is option [A]

9. Subtract the following in base two  $1110_2 - 1001_2$ .

- A.  $101_2$
- B.  $001_2$
- C.  $111_2$
- D.  $100001_2$

**THE CORRECT ANSWER IS OPTION [A]**

$$\begin{array}{r} 1110 \\ - 1001 \\ \hline 101_2 \end{array}$$

10. Add the following  $1011_2 + 1101_2$ .

- A.  $111110_2$
- B.  $11000_2$
- C.  $1110_2$
- D.  $111_2$

The correct answer is option [B]

11. Convert  $17_8$  to denary number.

- A.  $15_{10}$
- B.  $13_{10}$
- C.  $14_{10}$
- D.  $12_{10}$
- E.  $11_{10}$

**The correct answer is option [A]**

Solution

$$\begin{aligned} &17_8 \text{ to denary number i.e. base 10} \\ &1 \times 8^1 + 7 \times 8^0 \\ &8 + 7 = 15_{10} \end{aligned}$$

**TOPIC: PROBABILITY**

**DIRECTION:** Choose the correct answer from the lettered options.

1. A bag contains 4 red balls, 6 black balls and 2 white balls. Find the probability that a ball picked at random will be a black ball.

A.  $\frac{1}{2}$

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

C.  $\frac{1}{3}$

D.  $\frac{1}{15}$

E.  $\frac{1}{6}$

The correct answer is option [A]

Solution.

4 red, 6 black, 2 white, probability of picking a black ball

$$\frac{6}{12} = \frac{1}{2}$$

**TOPIC: S. I. UNITS**

**DIRECTION: Choose the correct answer from the lettered options.**

1. Express 3.85km in metres.

- A. 3,850 metres
- B. 3,8500 metres
- C. 385 metres
- D. 38.5 metres

The correct answer is option [A]

$$1\text{km} = 1000\text{m}$$

$$= 3.85\text{km} \times 1000 = 3,850 \text{ metres}$$

2. The litre is the basic unit of \_\_\_\_\_.

- A. area
- B. period
- C. water
- D. kerosene
- E. capacity

The correct answer is option [E]

3. 1 millilitre = 1 \_\_\_\_\_.

- A.  $\text{cm}^3$
- B.  $\text{cm}^2$
- C.  $\text{dm}^3$
- D.  $\text{dm}^2$
- E. mm

The correct answer is option [A]

4. Express 5000 m in kilometres.

- A. 500 km
- B. 50 km
- C. 5 km
- D. 0.5 km

The correct answer is option [C]

$$1\text{km} = 1000\text{m}$$

$$= 5\text{km} \times 1000 = 5,000 \text{ metres}$$

5. How many seconds are in  $\frac{1}{4}$  hours?

- A. 900 seconds
- B. 1000 seconds
- C. 650 seconds
- D. 700 seconds

The correct answer is option [A]

$$\frac{1}{4} \text{ of } 1 \text{ hr} = \frac{1}{4} \times 60 \text{ minutes} = 15 \text{ minutes}$$

$$15 \text{ minutes to seconds} = 15 \times 60 = 900 \text{ seconds.}$$

6. Express 458 cm in metres.

- A. 4.58 m
- B. 458 m
- C. 45.8m
- D. 0.458m

The correct answer is option [A]

$$1\text{cm} = 0.01\text{m}$$

$$458\text{cm} \times 0.01 = 4.58\text{metres}$$

7. The symbol  $\propto$  means \_\_\_\_.

- A. equivalent to
- B. proportional to
- C. alpha
- D. approximately
- E. equal to

The correct answer is option [B]

8. Convert 1 hectometre to metre.

- A. 1000m
- B. 100m
- C. 10m
- D. 1m
- E. 0.1m

The correct answer is option [B]

9. Convert 0.01 Km to metres.

- A. 1000m
- B. 100m
- C. 10m
- D. 1m
- E. 0.1m

The correct answer is option [C]

10. 10,000 kobo =?

- A. ₦1
- B. ₦10
- C. ₦100



- D. ₦1, 000
- E. ₦10, 000

The correct answer is option [C]

11. Express 10.4km in metres.

- A. 1,040 metres
- B. 1,400 metres
- C. 1,0400 metres
- D. 104 metres

The correct answer is option [C]

$$1\text{km} = 1000\text{m}$$

$$= 10.4\text{km} \times 1000 = 10400 \text{ metres}$$

12. Express 6km in metres.

- A. 6000 metres
- B. 600 metres
- C. 0.06 metres
- D. 60 metres
- E. 60,000 metres

The correct answer is option [A]

Solution

6km in metres

$$1000 \text{ metres} = 1\text{km}$$

$$\therefore 6\text{km} = 6000 \text{ metres}$$

13. Express 3km in metres.

- A. 3 metres
- B. 3,000 metres
- C. 300 metres

D. 30 metres

The correct answer is option [B]

$$1\text{km} = 1000 \text{ m}$$

$$= 3\text{km} \times 1000 = 3000 \text{ metres}$$

14. The square metre is the basic unit of \_\_\_\_\_.

A. length

B. mass

C. volume

D. area

E. capacity

The correct answer is option [D]

15. Express 1000mm in metres

A. 0.1m

B. 100m

C. 1m

D. 10m

The correct answer is option [C]

$$1\text{mm} = 0.01\text{m}$$

$$1000 \times 0.01 = 1\text{m}$$

16. Express 173 cm in metres.

A. 1.73 m

B. 17.3 m

C. 173 m

D. 0.173 m

The correct answer is option [A]

$$1\text{cm} = 0.01\text{m}$$

$$= 173\text{cm} \times 0.01 = 1.73 \text{ metres}$$

17. Add the following and give the answer in kg; 574g, 1.706kg and 605g.

- A. 0.65 kg
- B. 0.574 kg
- C. 2.885 kg
- D. 3.287 kg

The correct answer is option [C]

Convert 574g to kg

$$\text{since } 1\text{kg} = 1000\text{g} \Rightarrow 574/1000 = 0.574\text{kg}$$

$$605\text{g} \Rightarrow 605/1000 = 0.605\text{kg}$$

$$\text{adding in kg} = 0.574 + 0.605 + 1.706 = 2.885\text{kg}$$

18. Express 10km in metres.

- A. 10000metres
- B. 1000metres
- C. 100metres
- D. 10metres

The correct answer is option [A]

$$1\text{km} = 1000\text{m}$$

$$= 10\text{km} \times 1000 = 10000 \text{ metres}$$

19.  $7.5\text{km} = ?$

- A.  $7.5 \times 10^3\text{m}$
- B.  $7.5 \times 10^{-3}\text{km}$
- C.  $75 \times 10^{-3}\text{km}$
- D.  $75 \times 10^3\text{m}$

E. 7.5000m

The correct answer is option [A]

20. The SI unit for length is \_\_\_\_\_.

A. kilogramme (kg)

B. metre square ( $\text{m}^2$ )

C. metre cube ( $\text{m}^3$ )

D. second

E. metre (m)

The correct answer is option [E]

**TOPIC: SOLVING EQUATIONS****DIRECTION: Choose the correct answer from the lettered options.**1. Factorise the expression  $a^2 - b^2$ .

- A.  $(a + b^2)(a^2 + b)$
- B.  $(a + b)(a - b)$
- C.  $(a - b)(a - b)$
- D.  $(b^2 + a^2)(a^2 - b^2)$
- E.  $(a + b)(a + b)$

The correct answer is option [B]

Solution

$$a^2 - b^2$$

Difference of two square

$$(a + b)(a - b)$$

2. Solve for X in  $X^2 + 6X - 7 = 0$ .

- A. -1, -7
- B. -1, -6
- C. -1, 7
- D. 1, -7
- E. 1, 7

The correct answer is option [D]

Solution

$$X^2 + 6X - 7 = 0$$

$$X^2 + 7X - X - 7 = 0$$

$$X(X + 7) - 1(X + 7) = 0$$

$$(X - 1)(X + 7) = 0$$

$$\therefore X = 1 \text{ or } -7$$

3. Simplify  $^{-18}/_{-6}$ .

- A. 3
- B. -3

C. -6

D. 6

E. 24

The correct answer is option [A]

Solution

$$\begin{array}{r} -18 \div -6 \\ \hline -18 \\ -6 \\ \hline 3 \end{array}$$

4. Sum of the interior angles of a triangle is equal to \_\_\_\_\_.

A.  $300^\circ$

B.  $90^\circ$

C.  $180^\circ$

D.  $360^\circ$

E.  $270^\circ$

The correct answer is option [C]

5. If  $y = 3 - X$ , find the value of  $y$  when  $X = 1$ .

A. 3

B. 1

C. 4

D. 2

E. 5

The correct answer is option [D]

Solution

$$\begin{array}{l} y = 3 - X, \\ \text{When } X = 1 \\ y = 3 - 1 \\ y = 2 \end{array}$$

6. Simplify  $\frac{22 \times 10}{7} + \frac{22 \times 4}{7}$ .

- A. 44
- B. 22
- C. 14
- D. 7
- E. 12

The correct answer is option [A]

Solution

$$\begin{aligned} & \frac{(22 \times 10)}{7} + \frac{(22 \times 4)}{7} \\ & \frac{220}{7} + \frac{88}{7} \\ & \text{LCM} \\ & \frac{220 + 88}{7} = \frac{308}{7} = 44 \end{aligned}$$

7. Find the value of X in the equation  $\frac{x}{3} = 5$ .

- A. 13
- B. 15
- C. 8
- D. 2
- E. 7

The correct answer is option [B]

Solution

$$\frac{x}{3} = 5$$

Cross multiply

$$X = 3 \times 5 = 15$$

8. Simplify  $3(X - 2y) - 4(X - 5y)$ .

- A.  $14y - X$
- B.  $14X + y$
- C.  $26X - y$
- D.  $7X - 26y$

E.  $26X + y$

The correct answer is option [A]

Solution

$$3(X - 2y) - 4(X - 5y)$$

$$3X - 6y - 4X + 20y$$

Take like terms

$$3X - 4X + 20y - 6y$$

$$-X + 14y$$

$$\text{or } 14y - X$$

9. The product of 3 numbers is 0.84; if two of the numbers are 0.7 and 0.2, find the third number.

A. 0.02

B. 0.06

C. 6.0

D. 2.0

E. 0.17

The correct answer is option [C]

Solution

Let the third number be a

$$0.7 \times 0.2 \times a = 0.84$$

$$a = \frac{0.84}{0.14} = 6$$

10. Factorise the expression  $4am^2 - 6am$ .

A.  $2a(2m - 3a)$

B.  $2am(2 + 3am)$

C.  $2am(2m - 3)$

D.  $2am(2a + 3m)$

E.  $m(2a + 3m)$

The correct answer is option [C]

Solution

$$4am^2 - 6am$$

$$2am(2m - 3)$$



11. Find the area of a circle of radius 1m.

- A.  $4\text{m}^2$
- B.  $3.14\text{m}^2$
- C.  $2.14\text{m}^2$
- D.  $4.14\text{m}^2$
- E.  $3.41\text{m}^2$

The correct answer is option [B]

Solution

Area of circle =  $\pi r^2$

$$\frac{22}{7} \times (1)^2 = \frac{22}{7} = 3.14\text{m}^2$$

12. Simplify  $X^5 \times X^2$ .

- A.  $X^3$
- B.  $X^7$
- C.  $X^{10}$
- D.  $X^2$
- E.  $X^{2\frac{1}{2}}$

The correct answer is option [B]

Solution

$$\begin{array}{l} X^5 \times X^2 \\ X^{5+2} \\ X^7 \end{array} \quad \text{using indices}$$

13. Express 90% as a common fraction in its lowest term.

- A.  $8/10$
- B.  $10/8$
- C.  $10/9$
- D.  $9/10$
- E.  $3/5$

The correct answer is option [D]

Solution

$$90\% = \frac{90}{100} = \frac{9}{10}$$

14. Solve graphically  $3X - y = -1$ ,  $X - 3y = 9$ .

A.  $x = 1.5$ ,  $y = -3.5$

B.  $x = 1.5$ ,  $y = 3.5$

C.  $x = 3.5$ ,  $y = 1.5$

D.  $x = -1.5$ ,  $y = -3.5$

E.  $x = -1.5$ ,  $y = 3.5$

The correct answer is option [D]

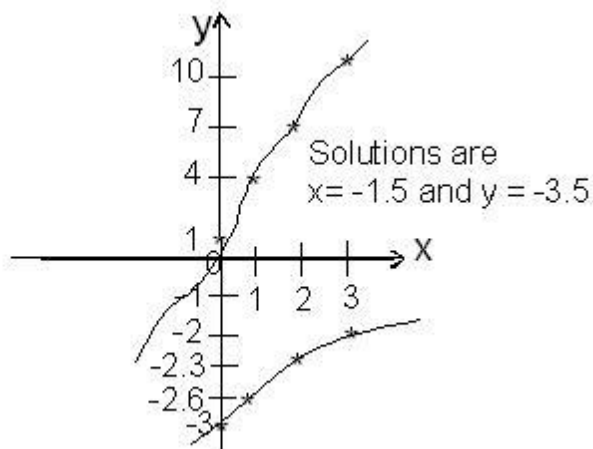
Solution

$$3X - y = -1$$

|   |   |   |   |    |
|---|---|---|---|----|
| X | 0 | 1 | 2 | 3  |
| y | 1 | 4 | 7 | 10 |

$$X - 3y = 9$$

|   |    |      |      |    |
|---|----|------|------|----|
| X | 0  | 1    | 2    | 3  |
| y | -3 | -2.6 | -2.3 | -2 |



**TOPIC: STATISTICS****DIRECTION: Choose the correct answer from the lettered options.**

1. Find in this order the mode, median and mean of the following set of numbers 7, 5, 11, 7, 12, 8, 6, 9, 7.

- A. 7, 7, 8
- B. 8, 8, 7
- C. 7, 8, 7
- D. 7, 7, 7

The correct answer is option [A]

Mode = 7

Median = 5, 6, 7, 7, 7, 8, 9, 11, 12 = 7

Mean =  $(5 + 6 + 7 + 7 + 7 + 8 + 9 + 11 + 12) / 9 = 72 / 9 = 8$

2. Calculate the mean of the following numbers 9, 11, 13.

- A. 11
- B. 13
- C. 9
- D. 12

The correct answer is option [A]

Mean =  $(9 + 11 + 13) / 3 = 33 / 3 = 11$

3. Find the median of the following set of numbers 3, 1, 6, 4, 2, 5, 5.

- A. 5
- B. 6
- C. 4
- D. 2

The correct answer is option [C]

Arranging in descending or ascending order 1,2,3,4,5,5,6

median = 4

4. Find in this order the mode, median and mean of the following set of numbers 4, 8, 11, 11, 12, 12, 12.

A. 1, 11, 15

B. 10, 12, 11

C. 10, 9, 12

D. 12, 11, 10

The correct answer is option [D]

Mode = 12

Median = 4,8,11,11,12,12,12 = 11

Mean =  $(4+8+11+11+12+12+12)/7 = 70/7 = 10$

5. Find in this order, the mode, median and mean of the following set of numbers 4, 5, 5, 7, 8, 10.

A. 7, 6, 6, 5

B. 6, 7, 6, 5

C. 5, 6, 6, 5

D. 4, 6, 5, 6

The correct answer is option [C]

mode = 5

median = 4,5,5,7,8,10 =  $(5+7)/2 = 6$

mean =  $(4+5+5+7+8+10)/6 = 39/6 = 6.5$

6. A street trader's profit after five days of trading was ₦6385. Calculate the mean profit per day.

A. ₦1,700

B. ₦1,500

C. ₦1,300

D. ₦1,277

The correct answer is option [D]

$$\text{Mean profit per day} = \text{₦}6385 / 5 = \text{₦}1,277$$

7. Calculate the mean of the following numbers 3.9kg, 5.2kg, and 5.3kg.

A. 3.9kg

B. 4.8kg

C. 5.2kg

D. 4.0kg

The correct answer is option [B]

$$\text{Mean} = (3.9\text{kg} + 5.2\text{kg} + 5.3\text{kg}) / 3 = 4.8\text{kg}$$

8. Find the mode of the following set of numbers 15, 14, 13, 11, 15, 14, 16, 15, 14, 14.

A. 16

B. 14

C. 15

D. 11

The correct answer is option [B]

The mode is the most frequently occurring number = 14.

9. Calculate the mean of the following numbers 5, 12, 3, 9, 10, 3.

A. 3

B. 9

C. 42

D. 7

The correct answer is option [D]

$$\text{Mean} = (5 + 12 + 3 + 9 + 10 + 3) / 6 = 42 / 6 = 7$$

10. Find the median of the following set of numbers 4, 8, 9, 12, 5, 7, 3, 4.

- A. 6
- B. 12
- C. 9
- D. 8

The correct answer is option [A]

Arrange in descending or ascending order

$$3, 4, 4, 5, 7, 8, 9, 12 = \frac{(5+7)}{2} = 6$$

11. Find the mode of the set of numbers: 2, 3, 6, 2, 6, 7, 6.

- A. 2
- B. 6
- C. 3
- D. 7
- E. 5

The correct answer is option [B]