| Candidate's Index Number |
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UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B. ED)
FIRST YEAR, END-OF-FIRST SEMESTER EXAMINATION, FEBRUARY 2020

FEBRUARY 11, 2020          ELEMENTARY ALGEBRA          2:00 PM – 2:40 PM

This paper consists of two sections, A and B. Answer all the questions in Sections A and THREE questions in Sections B. Section A will be collected after the <u>first 40 minutes</u>.

SECTION A
Answer all the questions in this section

For items 1 to 19, each stem is followed by four options lettered A to D. Read each item carefully and circle the letter that corresponds to the correct or the best option.

1. Which of the following ratios does not form a proportion?
    A. $5:6$ and $35:42$
    B. $36:39$ and $24:26$
    C. $5:12$ and $3:7$
    D. $5:25$ and $20:100$

2. Given that $n\left(B' \cap A\right) = 16$, find $n\left(U\right)$ where $U$ represents the universal set of the venn diagram below.
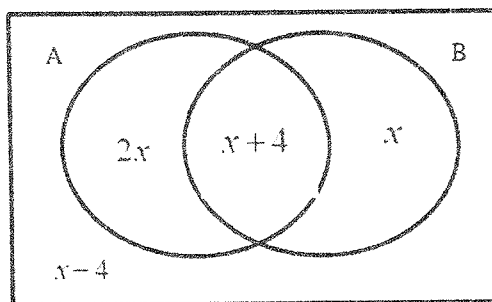


    A. 34
    B. 36
    C. 38
    D. 40

3. Akushika sells shoes at a shop, where she is paid Gh¢100.00 per week plus a 5% commission on all his sales. How much does she earn in a week in which her sales amount to Gh¢1840.00?
   A. GH¢192.00
   B. GH¢182.00
   C. GH¢162.00
   D. GH¢172.00

4. A store offers a 25% discount on all items for paying cash. How much will a mattress marked at Gh¢400.00 cost if payment is made in cash?
   A. GH¢200.00
   B. GH¢250.00
   C. GH¢300.00
   D. GH¢350.00

5. Afua carried out some transactions in base nine where she bought $28_{nine}$ items. If each item cost Gh¢$37_{nine}$, determine the total amount Afua paid for the items?
   A. ¢$1082_{nine}$
   B. ¢$2182_{nine}$
   C. ¢$1282_{nine}$
   D. ¢$1182_{nine}$

6. The number 287 when converted to base 3 is _____.
   A. $101122_{three}$
   B. $100122_{three}$
   C. $111122_{three}$
   D. $111112_{three}$

7. Solve: $x - \dfrac{5}{8} = \dfrac{3}{4}$.
   A. $-\dfrac{11}{8}$
   B. $\dfrac{-1}{8}$
   C. $\dfrac{1}{8}$
   D. $\dfrac{11}{8}$

8. Which of the following exponential equations represent the following logarithmic equation: $\log_{(x+1)} 9 = 2$?

   A. $9 = 2(x+1)$

   B. $\dfrac{9}{2} = (x+1)$

   C. $9 = (x+1)^2$

   D. $9^2 = (x+1)$

9. Rewrite and simplify the following logarithm using the appropriate laws of logarithms: $\log 100t^4$.

   A. $2 + 4\log t$

   B. $\log 10 + 4\log t$

   C. $\log 100 + \log t^4$

   D. $2\log 10 + 4\log t$

10. In a sports contingent, there are 25 players in the football team and 18 players in the hockey team. Four players play both football and hockey. Find the number of players in the contingent.
    A. 21
    B. 35
    C. 39
    D. 43

11. Find the value of $x$ such that $365_{seven} + 43_x = 217_{ten}$.
    A. 5
    B. 6
    C. 7
    D. 8

12. Given the following system of equations: $\begin{cases} x + y = 4 \\ 3x - y = 0 \end{cases}$, determine which of the following ordered pairs is a solution to the system.

    A. $(0, 4)$

    B. $(3, 1)$

    C. $(1, 3)$

    D. $(4, 0)$

13. A bag contains bars of chocolate. When divided amongst 8 children, each child receives 9 bars of chocolate. How many bars of chocolate will each child receive if the contents of the bag were divided amongst 24 children?

    A. 3

    B. 4

    C. 6

    D. 8

14. Find the sum of the following algebraic expression: $13y + 7x + 5x$.

    A. $13y + 7x + 5x$

    B. $13y + 12x$

    C. $13y + 12x^2$

    D. $25xy$

**Use the following graph to answer questions 15 – 17.**
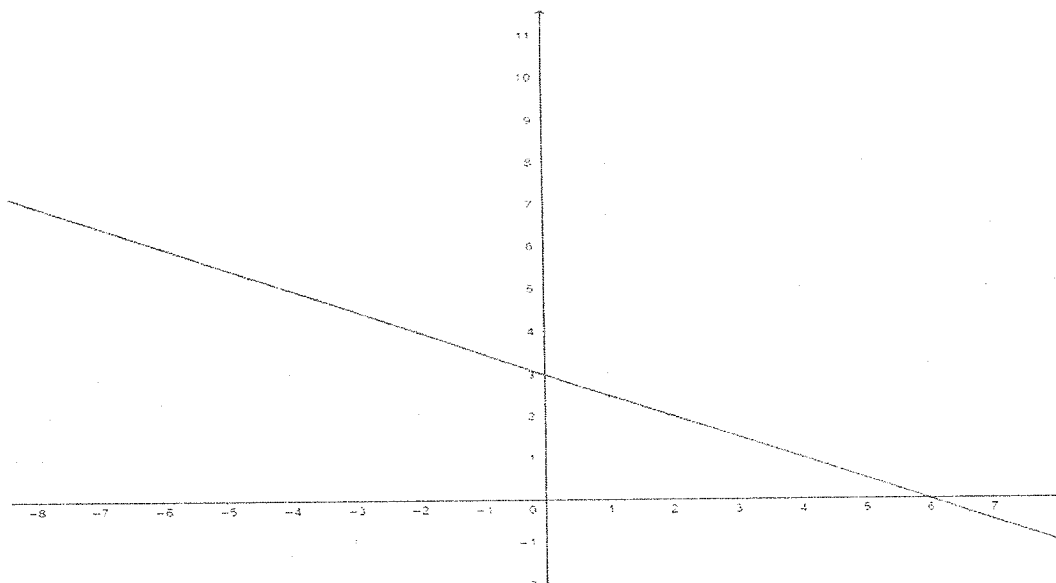


15. Determine the x-intercept of the graph.

    A. -6

    B. -3

    C. 3

    D. 6

16. What is the slope of the line?

    A. -1

    B. $\dfrac{-1}{2}$

    C. $\dfrac{-1}{2}$

    D. 1

17. Which of the following points does not lie on the line?

    A. $(-6, 6)$

    B. $(0, 3)$

    C. $(6, 0)$

    D. $(4, 5)$

18. What percentage of the letters of the word "ANNOUNCEMENT" are N?

    A. $30\dfrac{1}{5}\%$

    B. $30\dfrac{1}{3}\%$

    C. $30\dfrac{1}{2}\%$

    D. $33\dfrac{1}{3}\%$

19. Every minute a human breathes 10 pints of air into the lungs. How many pints of air are breathed in a 24-hour period?

    A. 144 pints

    B. 400 pints

    C. 1,440 pints

    D. 14,400 pints

**Item 20 is a statement followed by True and False option. Read the item carefully and indicate whether the statement is True or False, by circling the letter of the correct option.**

20. Tthe ordered pair (8, 5) is a solution to the following systems of equation:

$$5x - 4y = 20$$

$$2x + 1 = 3y$$

    A. True

    B. False