

Answer all questions

Each question is followed by four options A to D. Find out the correct option for each question and shade in pencil on your answer sheet the answer space which bears the same letter as the option you have chosen. Give only one answer to each question. An example is given below.

What is the smallest number which is divisible by 16 and 20?

- A. 80
B. 40
C. 120
D. 160

The correct answer is 80, which is lettered A and therefore answer space A would be shaded.

A

B

C

D

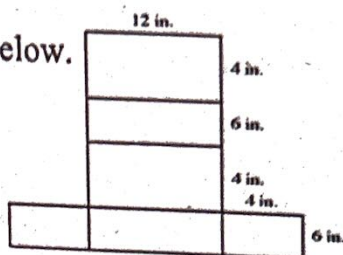
Think carefully before you shade the answer spaces. Erase completely an answer you wish to change.

Do all rough work on this question paper.

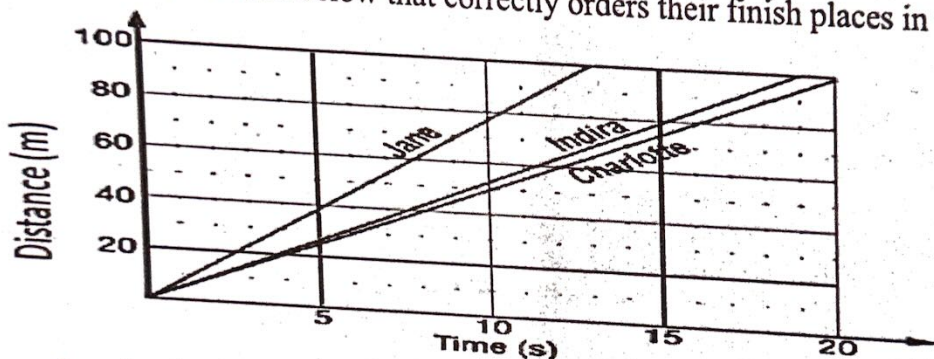
Now answer the following questions

1. Find the area of the cuboid whose net is shown below.

- A. 300 in^2
B. 144 in^2
C. 240 in^2
D. 288 in^2



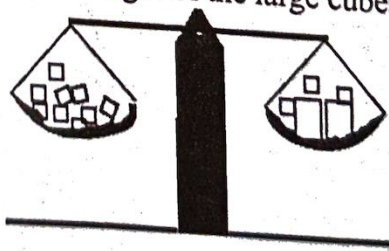
2. The distance-time graph below shows the motion of 3 students, Jane, Indira and Charlotte in a race. Select the alternative below that correctly orders their finish places in the race.



- A. Jane is 1st, Indira is 2nd and Charlotte is 3rd
B. Indira 1st, Jane is 2nd and Charlotte is 3rd
C. Charlotte 1st, Indira is 2nd and Jane is 3rd
D. Charlotte 1st, Jane is 2nd and Indira is 3rd

3. The scale below is balanced. If each of the small cubes on the left weigh 2kg and the large ones on the right weigh p kg each, find the weight of the large cubes.

- A. $p = 4 \text{ kg}$
B. $p = 6 \text{ kg}$
C. $p = 8 \text{ kg}$
D. $p = 5 \text{ kg}$



4. The quantity 8,134,592 can be read as
- A. Eight million, one hundred thirty-four thousand, five hundred ninety-two.
B. Eight million, one hundred forty-three thousand, five hundred ninety-two.
C. Eight million, one hundred thirty-four thousand, five hundred ninety.
D. Eight million, one hundred forty-three thousand, five hundred ninety-two.

Each shape below stands for a number. Calculate the missing value.

- A. 30
- B. 68
- C. 88
- D. 95

$$\textcircled{0} + \textcircled{0} = 32$$

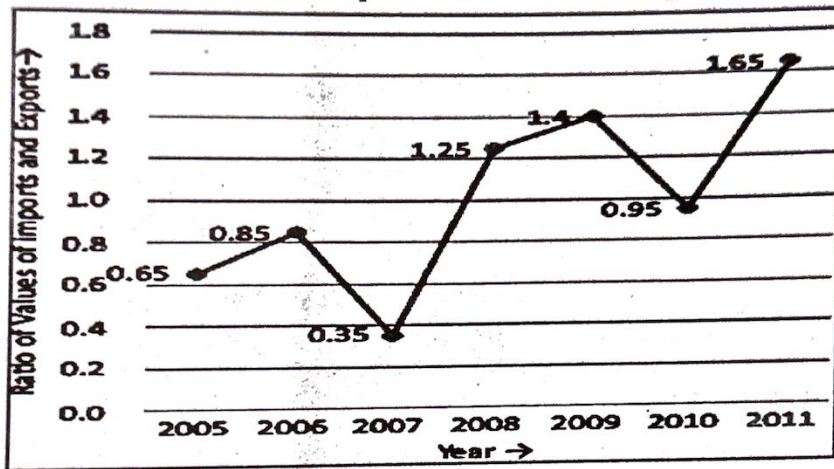
$$\textcircled{0} + \textcircled{0} = \textcircled{0} + \textcircled{0} + \textcircled{0}$$

$$\textcircled{0} + \textcircled{0} + \textcircled{0} + \textcircled{0} = \underline{\hspace{2cm}}$$

6. If $k = \frac{n}{2} + \frac{m^2}{n}$, find k when $m = -8$ and $n = 6$

- A. $13\frac{2}{3}$
- B. $11\frac{2}{3}$
- C. $13\frac{1}{3}$
- D. $11\frac{1}{3}$

7. The line - graph below gives the ratio of imports to exports for a company from 2005 to 2011. In how many of the given years were the exports more than the imports?



- A. 1
- B. 2
- C. 3
- D. 4

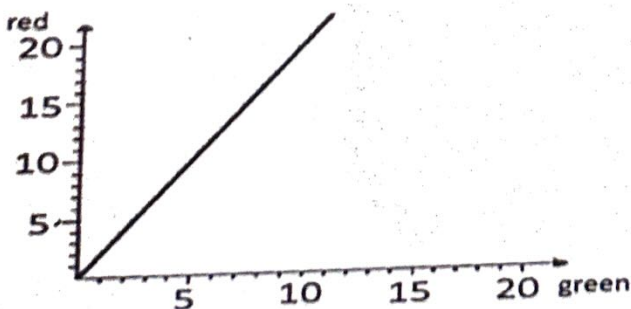
8. Find the missing numbers in the sequence 35420, 35415, __, 35405, __, 35395

- A. 35410, 35400
- B. 35412, 35402
- C. 35413, 35,403
- D. 35414, 35404

9. Solve for x in the equation $(27)^{x+1} = \frac{1}{81}$

- A. $x = \frac{3}{7}$
- B. $x = \frac{7}{3}$
- C. $x = -\frac{7}{3}$
- D. $x = \frac{7}{3}$

10. Which of the following can explain the graph below?

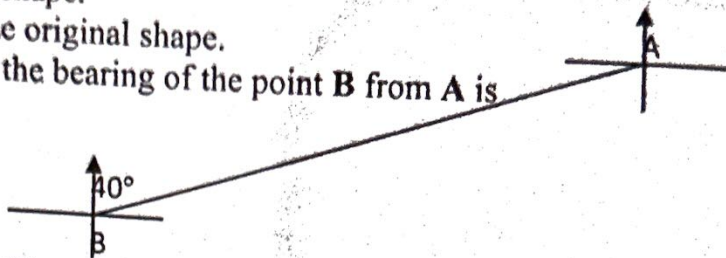


Turn over

- A. For every 2 green sweets, there is 1 red sweet
 B. For every 5 green sweets, there is 1 red sweet
 C. For every 1 green sweets, there are 5 red sweets
 D. For every 1 green sweet, there are 2 red sweets

11. An inscribed figure is a shape drawn
 A. outside another shape.
 B. wider than the original shape.
 C. inside another shape.
 D. smaller than the original shape.

12. In the diagram below, the bearing of the point B from A is

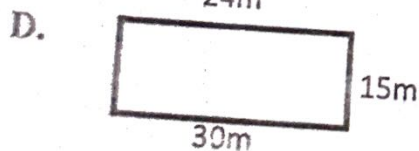
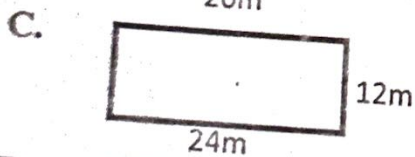
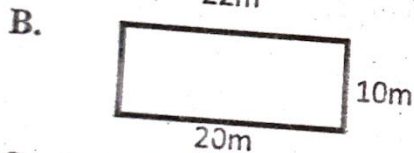
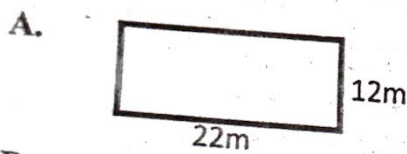


- A. 340°
 B. 220°
 C. 140°
 D. 50°

13. The amount of energy (E), released when matter is converted to energy is proportional to mass of that object. When $E = 9 \times 10^{13}$ Joules, $m = 1 \times 10^{-3}$. Calculate the mass, in kg when $E = 18 \times 10^{15}$. Give your answer in standard form.

- A. 2×10^{-1}
 B. 2×10^{-2}
 C. 2×10^{-3}
 D. 2×10^{-4}

14. A 72-metre-long rope is used to form a rectangle so that the length is twice its width. Which of the following is the rectangle with the correct dimensions?



15. Simplify $2\sqrt{18} - 3\sqrt{72} + 3\sqrt{50}$, leaving your answer as a surd.

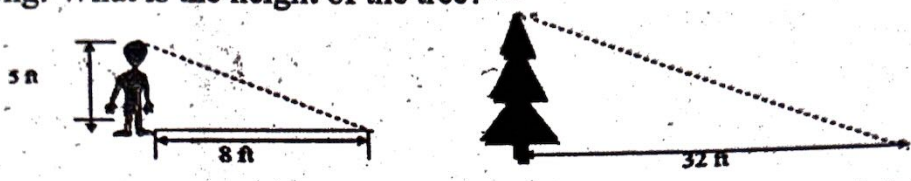
- A. $-4\sqrt{2}$
 B. $4\sqrt{2}$
 C. $-3\sqrt{2}$
 D. $3\sqrt{2}$

16. Which of the following is **not** true?

- A. $\frac{2}{4} = \frac{8}{12}$
- B. $\frac{3}{4} = \frac{12}{9}$
- C. $\frac{2}{2} = \frac{6}{6}$
- D. $\frac{2}{3} = \frac{10}{15}$

17. In the figure below, Lance is 5 ft tall and his shadow is 8 ft long. At the same time of day, a tree's shadow is 32 ft long. What is the height of the tree?

- A. 20 feet
- B. 24 feet
- C. 29 feet
- D. 51 feet



18. A fruit vendor sold 20% of 1,500 oranges in a basket. How many oranges are left in the basket?

- A. 300
- B. 600
- C. 900
- D. 1200

19. Factorize completely $1 - 16y^2$

- A. $(1 - 4y)(4 - 4y)$
- B. $(1 + 4y)(4 + 4y)$
- C. $(1 + 4y)(1 - 4y)$
- D. $(1 - 4y)(4y - 1)$

20. If $m = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ and $n = \begin{pmatrix} -3 \\ 0 \end{pmatrix}$, find $m + 2n$

- A. $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$
- B. $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$
- C. $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$
- D. $\begin{pmatrix} -4 \\ 3 \end{pmatrix}$

21. The diameter of a human red blood cell is about 8 micrometers. Write this in a standard form.

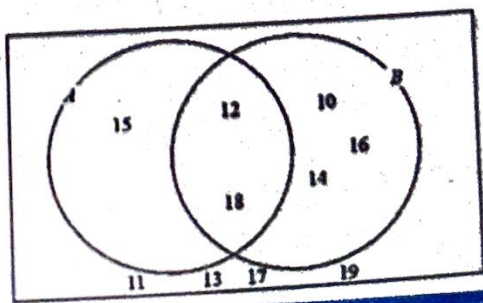
- A. 8×10^{-3}
- B. 8×10^{-6}
- C. 8×10^{-9}
- D. 8×10^{-12}

22. Given that $9^m = 3^{m+5}$, find the value of m

- A. 4
- B. 3
- C. 2
- D. 5

23. Find the set $A \cup B$ in the Venn diagram below.

- A. $\{20, 21, 22, 23, 24, 25, 26, 27, 28, 29\}$
- B. $\{5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
- C. $\{15, 16, 17, 18, 19, 20, 21, 22, 23, 24\}$
- D. $\{10, 12, 14, 15, 16, 18\}$



24. Simplify $\frac{3}{2+\sqrt{3}}$

- A. $\frac{4-2\sqrt{3}}{7}$
 B. $2\sqrt{3}$
 C. $4-2\sqrt{3}$
 D. $6-3\sqrt{3}$

25. Order the fractions $\frac{3}{8}, \frac{1}{2}, \frac{5}{16}$ from the smallest to the largest.

- A. $\frac{3}{8} < \frac{1}{2} < \frac{5}{16}$
 B. $\frac{1}{2} < \frac{3}{8} < \frac{5}{16}$
 C. $\frac{5}{16} < \frac{3}{8} < \frac{1}{2}$
 D. $\frac{1}{2} < \frac{5}{16} < \frac{3}{8}$

26. Evaluate $\frac{27 \times 10^2 \times 3}{10^3 \times 8.1 \times 9}$

- A. $\frac{1}{3}$
 B. $\frac{1}{9}$
 C. $\frac{1}{10}$
 D. $\frac{1}{18}$

27. An STC bus travels 4km less than twice the distance travelled by a VIP bus. The total distance travelled by both buses is 890km. Calculate the distance travelled by the STC bus.

- A. 298km
 B. 592km
 C. 590km
 D. 600km

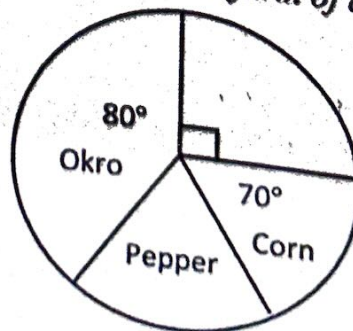
28. Find the surface area of a cuboid of sides 15m by 12m by 3m

- A. $261m^2$
 B. $360m^2$
 C. $540m^2$
 D. $522m^2$

The pie chart below shows the distribution of crops on a farm of area 250 hectares. Use it to answer question 29 and 30

29. Find the area of the plot with corn.

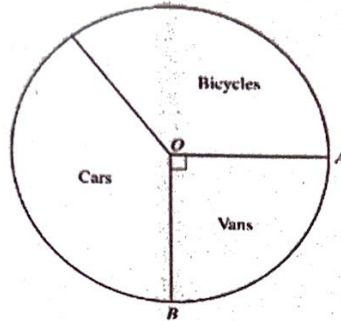
- A. 48.6km
 B. 62.5km
 C. 5.3km
 D. 83.3km



30. What fraction of the farm is planted with pepper?

- A. $\frac{1}{3}$
 B. $\frac{1}{4}$
 C. $\frac{1}{5}$
 D. $\frac{2}{9}$

31. The pie chart below shows the number of vehicles parked outside a supermarket. Angle AOB is a right angle. Given that there were 60 vehicles, how many vans were there?



- A. 15
 B. 20
 C. 25
 D. 30

32. The table below shows the number of doughnuts sold in a box and the corresponding prices.

Number of doughnuts	6	12	18
Price (Gh¢)	15	24	33

Following this pattern, how much will it cost to buy 24 doughnuts?

- A. GH¢39.00
 B. GH¢42.00
 C. GH¢45.00
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33. Write 0.00000101 in a standard form

- A. 1.01×10^{-6}
 B. 10.1×10^{-6}
 C. 1.01×10^5
 D. 10.1×10^6

34. How many lines of symmetry has the flower petals shown below?

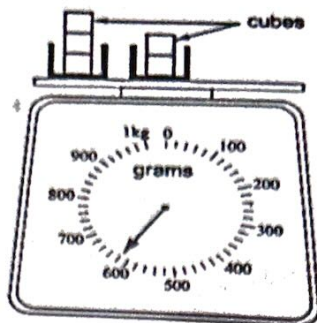
- A. 1
 B. 3
 C. 5
 D. 7



35. The number of fish in a pond is increasing at the rate 4^{n-2} , where n is the number of months. How many months will be required to produce a total of 1,024 fish in the pond?

- A. 10 months
 B. 8 months
 C. 7 months
 D. 9 months

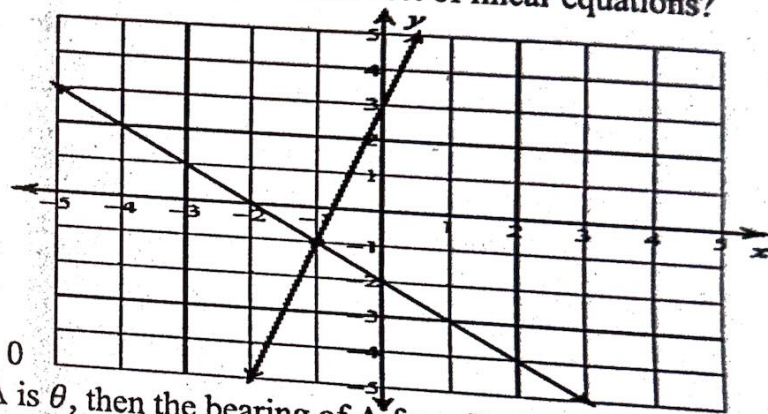
36. The weight of 5 cubes of sugar is shown below. Calculate how much each cube of sugar weighs.



- A. 120
 B. 600
 C. 620
 D. 124
37. Simplify $\frac{x^2-1}{2} - \frac{1-x^2}{3}$

- A. $\frac{5x^2-5}{6}$
 B. $\frac{5x^2}{6}$
 C. $\frac{10x^2}{6}$
 D. $\frac{5x^2+5}{6}$

38. From the graph below, the point $(-1, -1)$ is the solution to which set of linear equations?



- A. $y = -\frac{5}{3}x + 3, y = \frac{1}{3}x - 3$
 B. $y = 4x + 3, y + x + 2 = 0$
 C. $y = -1, y = -\frac{5}{2}x + 4$
 D. $y = -2x + 2, y + 2x + 2 = 0$

39. In general, if the bearing of B from A is θ , then the bearing of A from B, the back bearing is
- I. $(180^\circ + \theta^\circ)$ if θ is less than 180°
 II. $(\theta^\circ - 180^\circ)$ if θ is greater than 180°
 III. $(360^\circ - \theta^\circ)$ if θ is less than 360°

- A. I only
 B. II only
 C. I and II only
 D. II and III only

40. Make q the subject of the relation $w = \frac{n-q}{q}$

- A. $q = \frac{n-1}{w}$
 B. $q = \frac{n+2}{1+w}$
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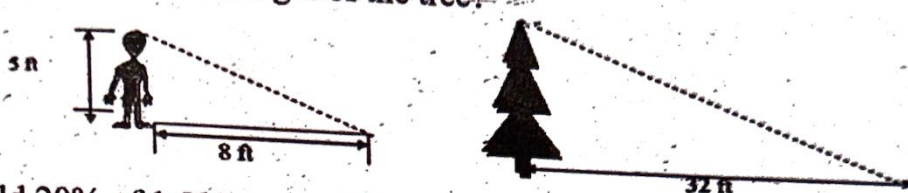
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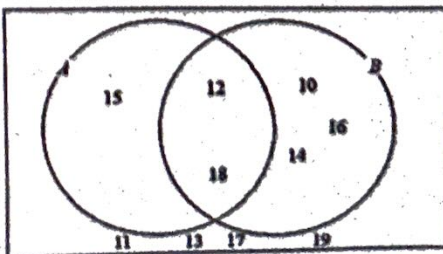
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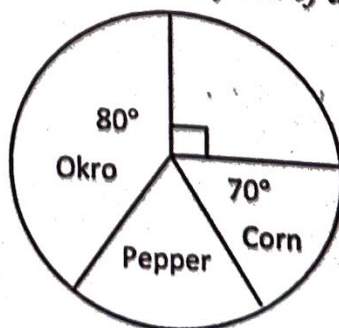
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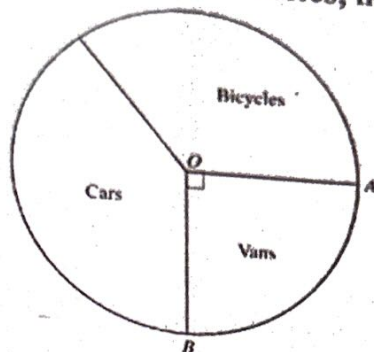
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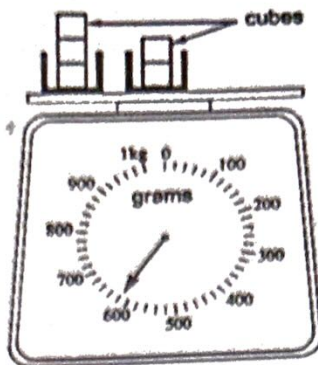
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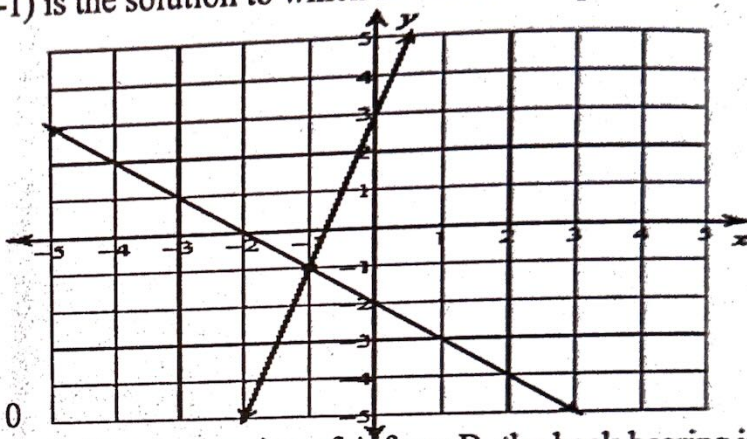


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