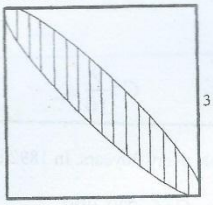
...e square below has sides of length 3cm and the arcs have centres at the corners. The area of the shaded area is



$A: 10.28cm^2$ $B: 7.10cm^2$ $C: 14.14cm^2$ $D: 5.14cm^2$

12. Which of the following best describes the shaded region in the Venn diagram above?

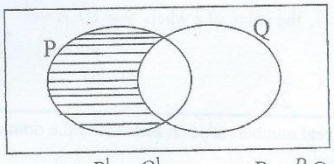


Figure 1

A. $P^1 \cap Q^1$ B. $P \cap Q$ C. $P^1 \cap Q$ D. $P \cap Q^1$

13. The value of $\frac{ab-c^2}{a^2-bc}$ when $a=2, b=-2$ and $c=-3$ is:

$A: -6.5$ $B: 6.5$ $C: -3.5$ $D: 3.5$

14. Ikome weighs 5N less than Wango, who in turn is 8N lighter than Sone. If their total weight is 195N, then the weight of Wango is:

$A: 59N$ $B: 72N$ $C: 64N$ $D: 66N$

15. The expression ax^2+bx+1, has remainder 2 when divided by $(x-1)$. When it is divided by $(x+1)$, the remainder is 4.

The value of a and b respectively is:

$A: 2, -1$ $B: 2, 1$ $C: 4, -1$ $D: 4, 1$

16.

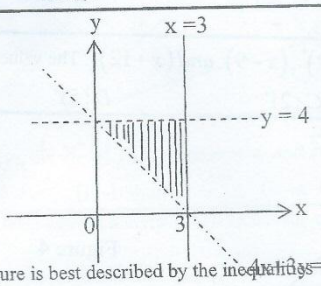


Figure 2

The shaded region in the figure is best described by the inequalities

$A: x \geq 3, y \geq 4 and 4x+3y>12$ $B: x \leq 3, y < 4 and 4x+3y>12$

$C: x \leq 3, y < 4 and 4x+3y<12$ $D: x \leq 3, y \leq 4 and 4x+3y \leq 12$

17. $\left(\frac{27}{125}\right)^{-\frac{1}{3}} \times \left(\frac{4}{9}\right)^{\frac{1}{2}} =$

~~A~~: $\frac{10}{9}$ $B: \frac{6}{9}$ $C: \frac{9}{10}$ $D: \frac{10}{27}$

18. The population of a country is estimated to double every 20years. In 1892 the population was 100,000. The 2022 population will be

$A: 700,000$ $B: 800,000$ $C: 6,400,000$ ~~D~~: $12,800,000$

19. Given that the three numbers 16, x and 4 are three consecutive terms of a Geometric Progression the value of x is

$A: 64$ ~~B~~: 8 $C: 9$ $D: 2$

20. Given that y varies inversely as z. If $y = \frac{1}{8}$ when $z = 4$, the value of z when $y = 10$ is

$A; 5$ ~~B~~: $\frac{1}{5}$ $C: \frac{1}{20}$ $D: 20$

21. Given that the domain and codomain are $\Re$, the set of real numbers x is an element in the domain and y is an element in the codomain. Which of the following is a relation?

A: 'is stronger than' B: 'is equal in area to' C: 'is the square of' ~~D~~: 'is a perfect square'

22.

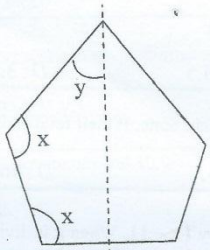


Figure 3

The diagram in figure 3 above shows a pentagon with just one axis of symmetry when y is 44°, $x =$

$A: 68^\circ$ $B: 113^\circ$ $C: 23^\circ$ ~~D~~: 158°

23. A pentagon has interior angles $x^\circ, (x+12)^\circ, (x+52)^\circ, (x-9)^\circ$ *and* $(x+12)^\circ$. The value of x is:

$A: 93^\circ$ ~~B~~: 57° $C: 21^\circ$ $D: 51^\circ$

24.

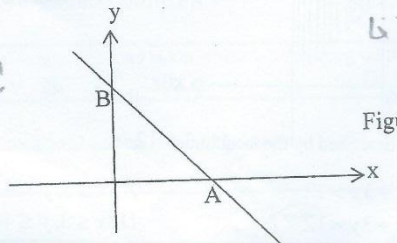


Figure 4

The straight line above with equation $5x + 4y - 40 = 0$. cuts the x-axis at A and the y-axis at B. The coordinates of A are:

$A: (10,0)$ $B: (0,8)$ $C: (0,10)$ ~~D~~: $(8,0)$

25. The cosine of the angle between the vectors $\overline{A} = 12i + 5j$ and $\overline{A} = 3i + 4j$ is:

A. $\frac{5}{13}$ B. $\frac{16}{65}$ ~~C.~~ $\frac{13}{5}$ D. $\frac{65}{16}$

26.

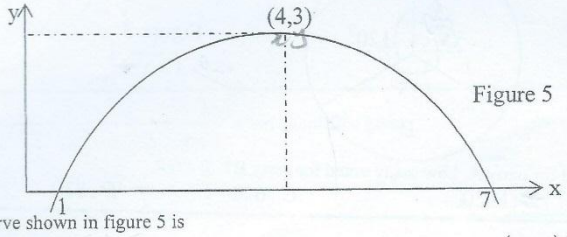


Figure 5

The equation of the curve shown in figure 5 is

A. $y = (x+1)(x+7)$ B. $y = (x-1)(x-7)$

C. $y = (x+3)(x+4)$ ~~D.~~ $3y = 4x$

27.

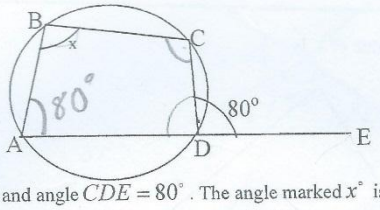


Figure 6

ABCD is a cyclic quadrilateral and angle $CDE = 80^\circ$. The angle marked x° is:

$A: 100^\circ$ $B: 40^\circ$ ~~C~~$: 80^\circ$ $D: 50^\circ$

28. Given that $(1, 2)$ is stretched by 2 along the x-axis and then reflected about the x-axis. Then its image is

$A: (5, -2)$ $B: (2, -2)$ $C: (-2, 2)$ ~~D~~$: (2, -4)$

29.

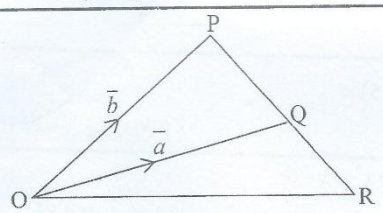


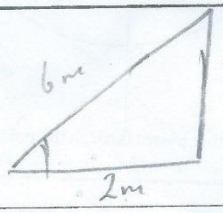
Figure 7

From the diagram above, the vector $\overrightarrow{PQ}$ in terms of $\bar{a}$ and $\bar{b}$ is

~~A:~~ $-\bar{a} - \bar{b}$ B: $-\bar{b} + \bar{a}$ C: $-\bar{a} + \bar{b}$ D: $\bar{b} - \bar{a}$

30. A ladder of length 6m leans against a vertical wall so that the base of the ladder is 2m from the wall. The angle between the ladder and the wall is:

~~A~~: 70.5° $B: 19.5^\circ$ $C: 18.4^\circ$ $D: 33.7^\circ$



31. In an election, people voted for parties A,B or C. The pie chart below shows how the people voted.

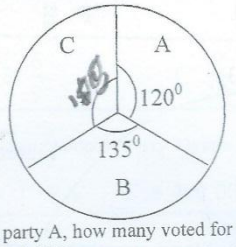


Figure 8

Given that 720 people voted for party A, how many voted for party B?

A:210 *B*:1920 *C*:630 *D*:810

32. One ball is selected at random from a bag containing 6 red balls, 3yellow balls and 5 white balls. What is the probability of selecting a red ball or a white ball?

A: $\frac{11}{14}$ *B*: $\frac{2}{11}$ *C*: $\frac{11}{28}$ *D*: $\frac{2}{30}$

33. In the triangle BE is parallel to CD. The value of x is

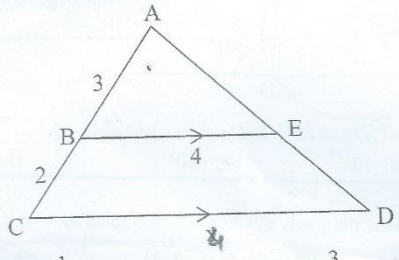


Figure 9

A:6 *B*: $7\frac{1}{2}$ *C*: $5\frac{3}{4}$ *D*: $6\frac{2}{3}$

34. Given that $f: x \to \left(\frac{x+6}{5}\right)+7, f^{-1}(15) =$

A:46 *B*:36 *C*:34 *D*:69

35. The sketch below shows the graph of $y = x^2 - x - 6$

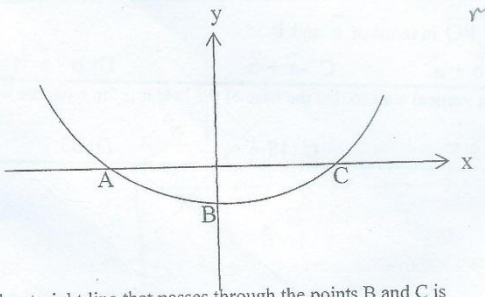


Figure 10

The gradient of the straight line that passes through the points B and C is

A:3 *B*:−3 *C*:2 *D*:−2

36. Given that $f = \dfrac{1}{\sqrt{\left(1-\dfrac{v^2}{c^2}\right)}}$, then $c =$

$A: \dfrac{f^2v^2}{f-1}$ $\quad B: \dfrac{fv}{f-1}$ $\quad C: \dfrac{f^2v^2}{f^2-1}$ $\quad D: \dfrac{fv}{f^2-1}$

37. The expression $\dfrac{1}{x-2} - \dfrac{3}{x^2-x-2} + \dfrac{2}{x+1}$ when simplified gives

$A: \dfrac{3x+6}{x^2-x-2}$ $\quad B: \dfrac{3x-2}{x^2-x-2}$ $\quad C: \dfrac{3}{x+1}$ $\quad D: \dfrac{3}{x-2}$

38.

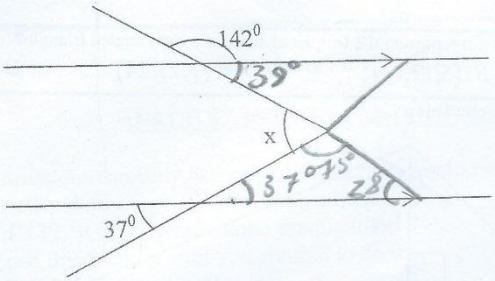


Figure 11

In the diagram above the angle marked x is

$A: 143^\circ$ $\quad B: 75^\circ$ $\quad C: 105^\circ$ $\quad D: 38^\circ$

39.

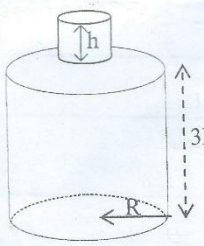


Figure 12

The diagram above shows a solid which consists of a cylinder of radius R and height 3h surmounted by a second cylinder, radius r and height h. The expression which could give the correct expression for the volume of the solid is:

$A: \pi r^2 + \pi R^2 h$ $\quad B: \pi r^2 h + 3\pi R^2 h$ $\quad C: 3\pi Rrh$ $\quad D: \pi rh + 3\pi Rh$

40.

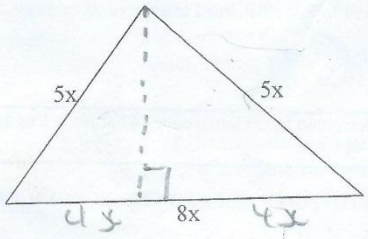


Figure 13

The area of the triangle above is

$A: 30x^2$ $B: 15x^2$ $C: 16x^2$ $D: 12x^2$

41. $1001_2 \times 101_2 =$

$A: 100111_2$ $B: 101101_2$ $C: 111010_2$ $D: 11001_2$

42. The fig shows a rectangular sheet of thin metal from which a cylinder 10cm high is to be made with no overlap. The radius of the cylinder is

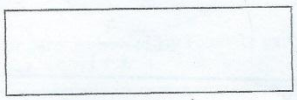


Figure 14

$A: 10.5cm$ $B: 6.6cm$ $C: 21cm$ $D: 38cm$

66 cm

43. Which one of the following does not represent the lengths of sides of a right angled triangle?

$A: (6,8,10)$ $B: (5,12,13)$ $C: (7,23,24)$ $D: (8,15,17)$

Question 44-47 concerns the diagram below

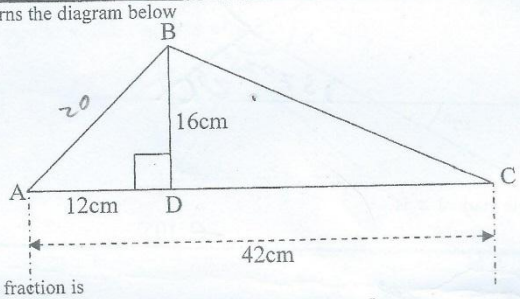


Figure 15

44. Tan BAD as a vulgar fraction is

$A: \frac{4}{5}$ $B: \frac{3}{5}$ $C: \frac{5}{6}$ $D: \frac{3}{4}$

45. $\sin ABD$ as a decimal fraction is

$A: 1.6$ $B: 0.8$ $C: 0.6$ $D: 0.75$

46. $B\hat{C}D$ to the nearest degree is

$A: 28^\circ$ $B: 27^\circ$ $C: 32^\circ$ $D: 58^\circ$

47. The perimeter of triangle BDC is:

$A: 80cm$ $B: 92cm$ $C: 70cm$ $D: 90cm$

48. Given that 500FCFA are exchanged for 1 US Dollar and 400US Dollars are exchanged for 240 pounds. How many pounds would be exchanged for 1,000,000FCFA?

$A: 1400$ $B: 4000$ $C: 1200$ $D: 6000$

49. A bullet traveling at $150m/s$ is fired from a rifle aimed at a target 500m away. How long does the bullet take to hit the target?

$A: 3\frac{1}{3}s$ $B: 0.3s$ $C: \frac{2}{5}s$ $D: 2.5s$

50. A sphere of radius 21cm is melted down and recast into a cube. What is the length of the side of the cube?

$A: 12.3$ $B: 33.9$ $C: 21.8$ $D: 60.2$

STOP, GO BACK AND CHECK YOUR WORK!!

570/1

1. The lowest common multiple of $56, 63 and 84$ is:
$A: 2^2 \times 3^2 \times 7$ $B: 2^3 \times 3^2 \times 7$ $C: 2^2 \times 3^3 \times 7$ $D: 2^3 \times 3^3 \times 7$

2. $\dfrac{\left[\left(-4^3\right)+\left(-4\times-2\right)\right]\div\dfrac{1}{2}+3}{-3\times-2\times-4} =$
$A: \dfrac{1}{24}$ $B: -\dfrac{25}{24}$ $C: -\dfrac{1}{24}$ $D: \dfrac{25}{24}$

3. $\left(2\dfrac{1}{2}\times1\dfrac{4}{7}\right)\div\left(2\dfrac{1}{2}-1\dfrac{2}{3}\right) =$
$A: 4\dfrac{5}{7}$ $B: 4\dfrac{1}{7}$ $C: 5\dfrac{2}{7}$ $D: 5\dfrac{1}{7}$

4. The distance from the Earth to the sun is 150million kilometers. The distance in standard form is:
$A: 1.5\times10^8$ $B: 1.5\times10^9$ $C: 1.5\times10^7$ $D: 1.5\times10^6$

5. A train leaves a station at $3:20\,pm$ and arrives its destination after 7hours 50minutes. Using the 24hour clock the train arrives its destination at
$A: 23:10$ $B: 22:70$ $C: 10:70$ $D: 11:10$

6. A man invests 90,000FCFA at 10% per annum and 10,000FCFA at 8% per annum. His return on the complete investment at the end of one year is:
$A: 1.8\%$ $B: 2\%$ $C: 10\%$ $D: 9.8\%$

7. A dealer offered an article for sale at 120,000FCFA which represent a profit of 20% to the dealer. On cash sale he allows a discount of 10%. His profit on a cash sale is therefore
$A: 8\%$ $B: 10\%$ $C: 30\%$ $D: 18\%$

8. Three men: Tom, Joe and Ben provided capitals of 1,000,000FCFA, 1,500,000FCFA and 2,500,000FCFA respectively for a business on the understanding that the shares of the profits were proportional to the capital provided. If the profits were 350,000FCFA, then Joe received
$A: 70,000 FCFA$ $B: 150,000 FCFA$ $C: 105,000 FCFA$ $D: 175,000 FCFA$

9. A map has a scale of 1:50,000. The real length of a road in km which is 10cm long on the map is:
$A: 5 Km$ $B: 50 Km$ $C: 250 Km$ $D: 25 Km$

10. The radius of a hemispherical solid whose total surface area is $32\pi cm^2$ is:
$A: 4\sqrt{2} cm$ $B: 2\sqrt{2} cm$ $C: 4cm$ $D: 8cm$