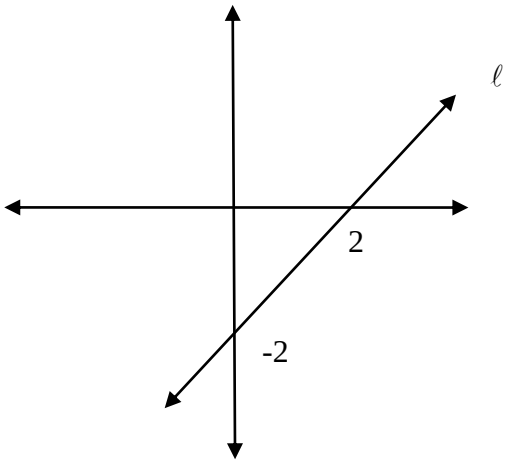
GRADE 8 MATHEMATICS QUESTION BANK

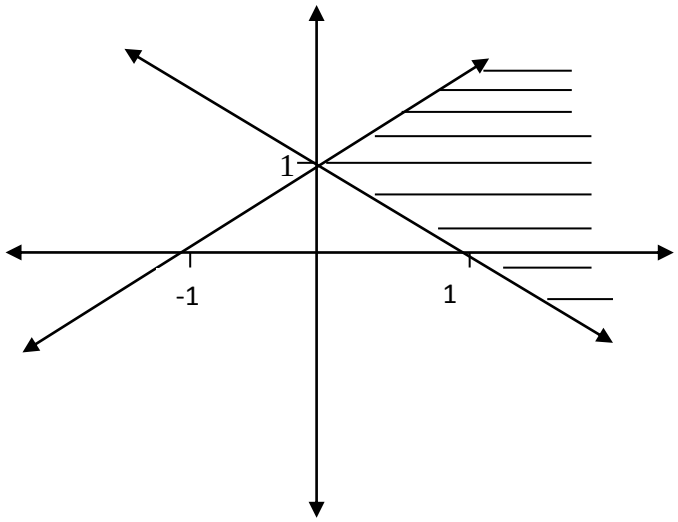
I. Choose the correct answer and write the letter of your choice on the space provided.

1. Which of the following statement is **true**?
   A. Subtraction is always practicable on the set of whole number.
   B. Subtraction is always practicable on the set of rational number.
   C. The set of whole number is closed under the operation division.
   D. Subtraction is practicable on the set of natural number.
2. Which of the following set contains all the other sets?
   A. Rational numbers C. Natural numbers
   B. Whole numbers D. Integers
3. The other name of the zero of a function is _____.
   A. the y-intercept C. the x-intercept
   B. the slope D. integers
4. If f(x) = -2x -1; then find f (-1)
   A. -3 B. 1 C. 0 D. none
5. What is the value of k so that the slope of a line that passes through (2, k) and (6, 5) is ½?
   A. 3 B. 4 C. 6 D. 0
6. Which one of the following is **false** about y = -3x -2 and y = 3x -2?
   A. They have the same y-intercept C. They are both linear equations
   B. They have the same slope D. All
7. What is the equation of a line, ℓ in the given graph?
   A. y = -2x + 1
   B. y = -x-2
   C. y = 2x+ 2
   D. y = x -2



8. Which one of the following ordered pairs is in the 1st quadrant?
   A. (3, -2) B. (4, 2) C. (-2, 3) D. (-2, -4)

9. Which of the following statement is **not true** about the graph of R?



A. Domain = {x: x > 0}
C. (0, 0) ε R
B. Range = {y : y ε R }
D. R = {(x,y) : y ≤ x + 1 and y ≥-x+1}

10. Which one of the following is **true** about the relation R = {(x, y): y > x -3 and x ≥ 2}?

A. R is a function
C. Range = {(x, y) : y ≥ -1}
B. Domain = {x: x ε R}
D. None

11. Which one is the slope-intercept (standard) form of the given equation -x -2y – 2 = 0?

A. Y = - x + 2
C. y = -2 x- 2
B. Y = $-\frac{1}{2}x - 1$
D. 2y = -x -2

12. If (4, 0) is an ordered pair located on the line of an equation 3y – kx -5 = 0; then what is the value of k?

A. -5
B. $-\frac{5}{4}$
C .0
D. None

13. If f(x) = $\frac{1}{3}x - \frac{4}{9}$; what is the value of f (0)?

A. $\frac{6}{10}$
B. $\frac{9}{10}$
C. $\frac{9}{11}$
D. None

14. If the domain of f(x) is = 3x – 2 is {x: -3 ≤ x ≤ 3 & x ε Q }, then what is the range of f?

A. { y : -11 ≤ y ≤ 7 & y ε Q }
C. { y : 7 ≤ y ≤ - 11 & y ε Q }
B. { y : -3 ≤ y ≤ 3 and y ε Q }
D. None

15. Which one is **true** about the graph of y = 2x?

A. Y is directly proportional to x.
C. the graph passes through 1st & 3rd quadrant
B. The graph always passes through (0, 0)
D. All of the above

16. What is the slope of a line that passes through (0, 6) & (3, 6)?

A. 0
B. 4
C. -2
D. None

17. What is the coefficient of x in $y - 4x = 6$?

A. 4 B. -4 C. 6 D. 1

18. $(x + 1)(x - 3) =$ _____.

A. $x^2 - 3x + 3$ B. $x^2 - 2x - 3$ C. $x^2 + 2x + 3$ D. None

19. The simplified form of $3(x-3) - 2(x + 1)$ is_____.

A. $x + 11$ B. $x - 11$ C. $2x - 11$ D. None

20. Which one of the following expressions can be divisible by two?

A. $36x - 4$ B. $8x - 7$ C. $5x + 8$ D. $10x - 3$

21. Which one of the following relations is a function?

A. {(-2, 5) , (-2, 1), (3,5)} C. {(7,1), (2,1), (7,2)}

B. {(0,3), (0,5), (0,-3)} D. {(9,10), (0,-9), (2,-9)

22. What is the value of $\frac{2y - x}{2x + y}$; x = 1 & y = 0?

A. $\frac{1}{2}$ B. $-\frac{1}{2}$ C. 2 D. None

23. The simplified form of $\frac{6x^2 - 9xy}{3x}$ $(x \neq 0)$ is _____.

A. $2x^2 - 3y$ B. $2x - 3y$ C. $6x - 3xy$ D. None

24. What is the solution set of $\frac{5}{x+1} = \frac{4}{x}$; $x \neq 0$ & $x \neq 1$?

A. {-4} B. {4} C. {2} D. {-2}

25. Which one of the following can be a possible value of x? $\frac{2x + 2}{3} > \frac{2x - 3}{2}$?

A. 10 B. 7 C. 6 D. None

26. F (x) = $\frac{4x + k}{4}$; if the zero of the function is 3, then what is the value of k?

A. 12 B. -12 C. 4 D. None

27. What is the slope & y – intercept of the equation $3x - 4y - 12 = 0$?

A. $m = \frac{1}{2}$ & $b = 12$ C. $m = -\frac{3}{4}$ & $b = 12$

B. $m = \frac{3}{4}$ & $b = -3$ D. $m = -\frac{3}{4}$ & $b = \frac{1}{4}$

28. What is the zero of the function $f(x) = -2x - 4$?

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

29. If m = 2 and b = 4; then what is the equation of the line?

A. $Y = 2x + 4$ B. $y = -2x - 4$ C. $y + 2x = 4$ D. None

30. If a se t has 4 elements, then what is the number of proper subset?

A. 16 B. 15 C. 4 D. 3

31. R = {(1, 2), (3, 4), (5, 6), (1,-2)} which one is **false** about the relation R?

A. R is a function C. Range of R is {2, 4, 6, -2}

B. Domain of R is {1, 3, 5} D. None

32. Which one of the following relation is a function?

A. {(x, y): x is mother of y} C. {(x, y): x is a factor of y}

B. { (x, y) : x is a sister of y} D. None

33. What is the slope of a vertical line?

A. 0 B. -1 C. has no slope D. 1

34. Which one of the following ordered pair belongs to R = {(x, y) : y – 2 = x}?

A. (0, -2) B. (0, 2) C. (2, 0) D. None

35. What is the lowest term of $\frac{21}{49}$?

A. $\frac{3}{6}$ B. $\frac{7}{3}$ C. $\frac{3}{7}$ D. None

36. Which one is a **false** statement?

A. $|-3| = |3|$ B. $|-3| \geq |4-1|$ C. $|4-6| > |6-4|$ D. None

37. Which of the following is a **positive rational** number?

A. $\frac{1}{3}$ B. 0.64 C. $3\frac{1}{6}$ D. All

38. $0 \div \left(\frac{36}{21} - \frac{1}{2} + \frac{6}{13}\right) =$ _____.

A. $-\frac{12}{13}$ B. 0 C. $\frac{1}{2}$ D. None

39. Which one of the following pair is a relatively prime number?

A. 3 and 6 B. 9 and 7 C. 12 and 28 D. None

40. Which one of the following is **<u>true</u>**?

A. 0.75 ε θ^+ B. $-\frac{1}{2}$ ε N C. -5 ε N D. -10.2 ε W

1. What is the value of $\frac{2y - x^2}{2x + y}$ if x = 1 and y = 0?

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

2. (y + 3) (Y – 2) = _____

A. $Y^2 - 5y - 6$ B. $y^2 + Y - 6$ C. $Y^2 - y - 6$ D. none

3. When $\frac{\sqrt{20}}{\sqrt{5}}$ simplified it is equal to

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

4. What is the value of $\sqrt{144\ x\ 81}$?

A. 12 B. 9 C. 12 x 9 D. 12 + 9

5. $\sqrt{\frac{1}{5}}$ x $\sqrt{125}$ = _____

A. 25 B. 5 C. $\frac{1}{5}$ D. $\frac{1}{25}$

6. The sum of the ages of a boy & his sister is 32 years. The boy is 8 years older than his sister. How old his sister?

A. 12 B. 20 C. 18 D. 19

7. Which one of the following inequalities has a finite solution set?

A. $2x - 3<5$, $X \in Q^+$ C. $\frac{1}{2} x \leq 3$, $x \in z$

B. $3x - 1 > 8$, $X \in Z^+$ D. $8 \geq 4x$, $x \in w$

8. Linear equations are said to be equivalent if they have the same _____.

A. Domain B. Variable C. Solution set D. range

9. Five times a number is decreased by 24 and the result is three times the number. What is the number?

A. 12 B. 15 C. 18 D. 9

10. Which of the following equations has a graph that is a horizontal line?

A. 3x + 2y = 2 B. 6x + 7 = 9 C. 4y – 10 = 2 D. x – y = 1

11. What is the slope of the line passing through the points (3, -2) and (0, 4)?

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

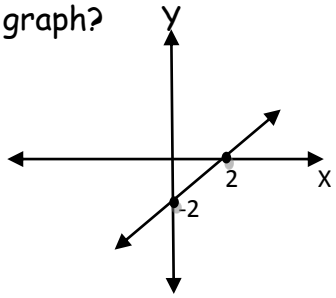
12. What is the equation of a line with slope m = -3 and passing through the points (1 , 2)?

A. 3x + y = 1 B. -3x + y = 5 C. -3x + y = 2 D. 3x + y = 5

13. Five times the abscissa plus six times the ordinate of a point (-6 , 2)

A. -18 B. 0 C. 12 D. -6

14. What is the equation of a line in the graph?



A. Y = x – 2

B. Y=2x+2

C. Y= -x - 2

D. Y= -2x + 1

15. Which one of the following ordered pair is in the fourth guardant?

A. (1 , 3) B. (3 , -1) C. (-3, -4) D. (0 , 0)

16. Which of the following is true about y – 3x = 6 ?

A. The slope is -3

B. The graph of y moves from the third quadrant to the first.

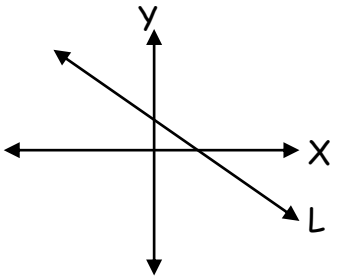
C. The y – intercept is -6 D. None

17. The value of k, where the graph of a relation passes through (3, k) and (2 ,4) with slope m =1 is _____

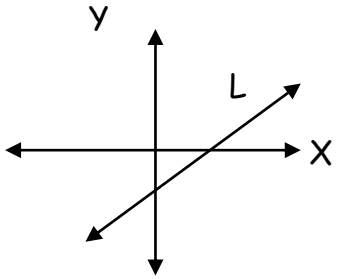
A. 3 B. -5 C. 5 D. 4

18. Which of the following graph represent a line with negative slope

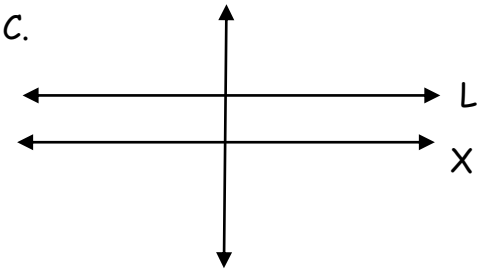
A.



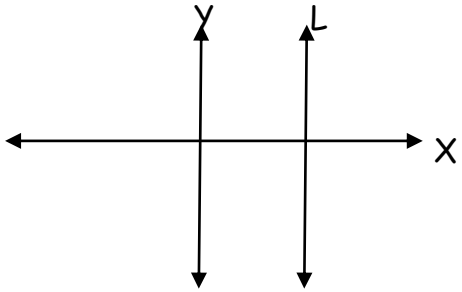
B.



C.



D.



19. A regular polygon has an interior angle of 160. How many sides does it have?

A. 12 B. 16 C. 18 D. 15

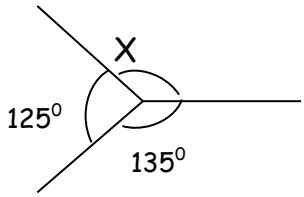
20. What is the value of x in degree measures?

A. 100^0

B. 90^0

C. 120^0

D. 110^0



21. θ and β are supplementary angles If $\theta = \frac{2}{3}\beta$, them θ = & β = _____

A. $\theta = 10^0$ & $\beta = 70^0$

B. $\theta = 72^0$ & $\beta = 108^0$

C. $\theta = 18^0$ & $\beta = 162^0$

D. $\theta = 162^0$ & $\beta = 18^0$

22. θ and β are complementary angles , If $\theta = \beta + 20^0$ then θ = _____ & β = _____

A. $\theta = 35^0$ & $\beta = 40^0$

B. $\theta = 55^0$ & $\beta = 55^0$

C. $\theta = 55^0$ & $\beta = 35^0$

D. $\theta = 35^0$ & $\beta = 35^0$

23. Which one of the following is true?

A. Every square is a rectangle

B. Every rhombus is a square

C. Every rectangle is a square

D. All

24. Which of the following statements is false about a parallelogram?

A. The opposite angles are congruent

B. The opposite sides are congruent

C. The diagonals are congruent

D. The consecutive angles are supplementary

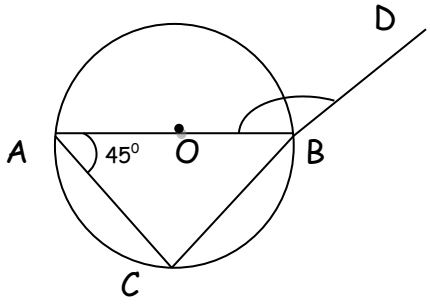
25. If 0 is the center of the circle & M (<BAC) = 45^0 , what is the measure of < ABD ?

A. 90^0

B. 120^0

C. 135^0

D. 145^0



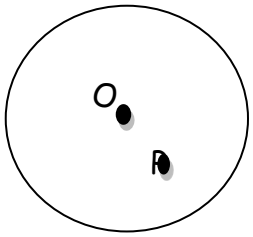
26. In the figure below, p is an interior point of a circle which one of the following lines is not possible to draw through the point P ?

A. a secant

B. a tangent

C. a diameter

D. a chord



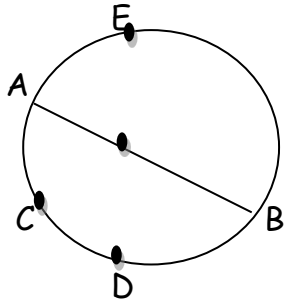
27. Which of the following **can not** be the lengths of sides of a triangle?

A. 6, 3 , 10 B. 7, 24, 25 C. 8, 12, 15 D. 5 , 12 , 13

28. The sum of the interior angles of a nonagon is _____.

A. 1260^0 B. 108^0 C. 1620^0 D. 360^0

From 29 – 31 answer the following questions based on the figure given bellow.



29. Which of the following is a major arc?

A. $\overset{\frown}{ACB}$ B. $\overset{\frown}{AE}$ C. $\overset{\frown}{CDB}$ D. $\overset{\frown}{ADE}$

30. Which of the following is a minor arc?

A. $\overset{\frown}{AE}$ B. $\overset{\frown}{AC}$ C. $\overset{\frown}{ACD}$ D. all

31. Which of the following is a semi circle?

A. $\overset{\frown}{ACD}$ B. $\overset{\frown}{DBE}$ C. $\overset{\frown}{AEB}$ D. $\overset{\frown}{AC}$

32. Which of the following has the same meaning as $\Delta ABC \sim \Delta EFG$?

A. $\Delta CBA \sim \Delta FEG$ B. $\Delta BCA \sim \Delta FGE$

B. $\Delta BAC \sim \Delta GFE$ D. None

33. $\Delta ABC \sim \Delta EDF$, If AB = 4 cm , ED = 6 cm & area of ΔABC is 20 cm^2 , then what is the area of ΔEDF

A. $45cm^2$ B. $55cm^2$ C. $20cm^2$ D. None

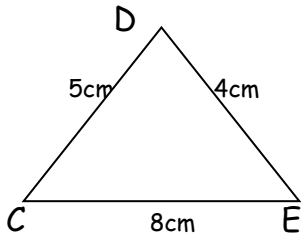
34. The two triangles are similar, then which is corresponding to $\overline{CD}$?

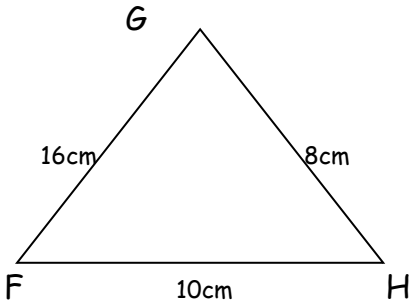
A. $\overline{FG}$

B. $\overline{FH}$

C. $\overline{GH}$

D. $\overline{CE}$





35. Which of the following plane figures are not necessarily similar?

A. Any two circles

B. Any two rectangles

B. Any two squares

D. Any two equilateral triangles

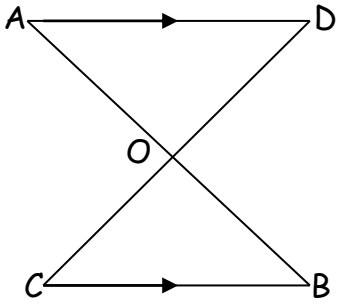
36. In the figure below $\overline{AD} \parallel \overline{BC}$. Then which one of the following conditions is sufficient to show that $\Delta AOD \sim \Delta BOC$?

A. SAS similarity theorem

B. AA similarity theorem

C. SSS similarity theorem

D. None



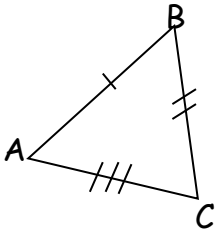
37. $\Delta CBA \sim \Delta$ _____ by _____

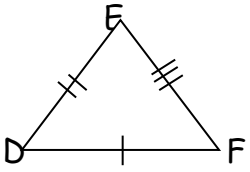
A. Δ DEF by SSS

B. Δ EDF by SSS

C. Δ FED by SSS

D. Δ DEF by SAS





38. If $\Delta ABC \cong \Delta DEF$, then what is the value of K (constant of proportionality).

B. 2 B. 1 C. 4 D. $\frac{1}{2}$

39. When $\frac{(-5)(12)-(-4)}{3(-6)+2(-5)}$ is simplified it is equal to _____

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

1. $\frac{5}{3}+\frac{x-2}{2}=\frac{5x-1}{6}, x \in \phi$ then $x =$ _____.

A. $\frac{-5}{2}$ B. $\frac{5}{2}$ C. $\frac{2}{5}$ D. $\frac{-2}{5}$

2. $5x \geq 10 + x - 3$ $x \in z$, then the possible values of x is/are

A. S.S = { }
C. S.S = {2, 4, 5,….}
B. S.S = {1, 2, 3,…}
D. S.S = {- - - ,-2,-1,0,1}

3. $\frac{2x+1}{3} = \frac{10-x}{2}, x \in N$, then $x =$ _____

A. 4 B. -4 C. $\frac{1}{4}$ D. $\frac{-1}{4}$

4. $\frac{10}{2}ab + \frac{3}{2}ab - \frac{1}{4}ab =$ _____

A. $\frac{9}{4}ab$ B. $9ab$ C. $7ab$ D. $\frac{7}{4}ab$

5. $10ab + 3cd - (4ab + 3cd) =$ _____

A. $6ab$ B. $14ab$ C. $-6ab$ D. $6ab + 6cd$

6. Which one of the following is always **true**?

A. $x - (y + a) = x - y - a$
C. $x - (y + a) = x - y + a$
B. $x - (y - a) = x + y + a$
D. $x - (y - a) = x - y - a$

7. $\frac{91a^2b^6}{7ab^3} =$ _____ $a, b \neq 0$

A. $13ab^3$ B. $12ab^3$ C. $\frac{13}{ab^3}$ D. $\frac{13a}{b^3}$

8. $\frac{\left[\frac{3}{2}a^3b^2\right]}{\left[\frac{1}{4}a^2b^4\right]} =$ _____ $a, b \neq 0$

A. $6ab^2$ B. $\frac{6a^2}{b}$ C. $6a/b^2$ D. $\frac{6}{ab^2}$

9. Which one of the following is **false** about $\frac{3}{2}y - 3x - 1 = 0$?

A. The slope of the equation is 2
C. the *x*- intercept is $-1/3$
B. The y- intercept is $1/3$
D. $x = \frac{1}{2}y - \frac{1}{3}$

10. If we have two points (-3,-1) & (0,-4), then the slope is _____.

A. -1 B. 1 C. $\frac{-5}{3}$ D. $5/3$

11. If we have two points (5, 3) & (2, 1), then the equation of the line is _____.

A. 3y + 2x+1 B. 3y - 2x+1 C. 3y - 2x+1 D. none

12. If we have two points (4, k) & (3, 2) & the slope is 3 then k would be _____.

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

13. Suppose a student council is to be elected in a class 60 student with 20 of them boys. What is the probability of the council elected to be a girl?

A. $1/3$ B. $1/2$ C. $2/3$ D. $3/2$

14. $\frac{6}{x} = \frac{4}{5-x}$, then x = _____.

A. -3 B. 3 C. 1 D. none

15. One number exceeds another by 5. The sum of the two numbers is 31. What are the numbers?

A. 19 & 12 B. 25 & 6 C. 18 & 13 D. 28 & 3

16. 4 times a number decreased by 10 equals three times the same number increased by 8, then what is the number?

A. 18 B. 9 C. $18/7$ D. $7/8$

17. $\left(\sqrt{\frac{3}{2}}\right)^2 \times \sqrt{\frac{81}{16}} =$ _____

A. $\frac{12}{8}$ B. $\frac{36}{8}$ C. $\frac{27}{8}$ D. none

18. $\sqrt{16} = x$,

A. 4 B. -4 C. 8 D. A & B

19. Which one of the following is **true** about two similar figures?

A. Their corresponding angles are congruent. C. their corresponding angles are proportional.

B. Their corresponding sides are proportional. D. A & B

20. The side lengths of two similar triangles are 15cm & 5cm, then the ratios of their perimeter is _____.

A. 1:3 B. 3:1 C. 1:9 D. 9:1

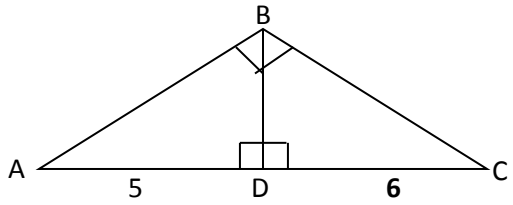
21. The side lengths of two similar triangles are 50cm & 40cm, then the ratios of their Area is _____.

A. 5:4 B. 4:5 C. 25:16 D. 16:25

22. Two pentagons are similar. The area of one of the pentagons is 16 times that of the other, then the ratios of the lengths of the corresponding sides is _____.

A. 1:2 B. 2:1 C. 4:1 D. 1:4

Use the figure below to answer questions from 23-26.



23. $\overline{AC}$ = _____ A. 11 B. 10 C. 30 D. 1

24. $\overline{AB}$ = _____ A. $\sqrt{55}$ B. 55 C. 6 D. none

25. $\overline{BC}$ = _____ A. 5 B. $\sqrt{66}$ C. 66 D. none

26. $\overline{BD}$ = _____ A. 30 B. 11 C. $\sqrt{30}$ D. none

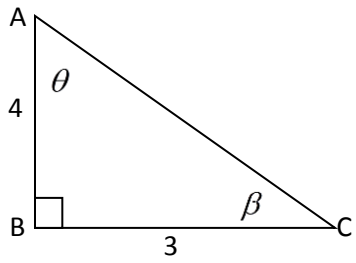
27. What is the length of the diagonal of a rectangle whose dimensions are 20cm & 10cm long?

A. $5\sqrt{10}$ B. 50 C. 500 D. $10\sqrt{5}$

28. One leg of an isosceles right triangle is 10cm long. How long is the hypotenuse?

A. $2\sqrt{10}$ B. $5\sqrt{2}$ C. $10\sqrt{2}$ D. none

Use the figure below to answer questions from 29 – 31.

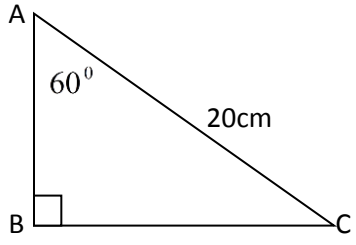


29. $\overline{AC}$ = _____ A. 5 B. 1 C. $\sqrt{7}$ D. $\sqrt{5}$

30. θ = _____ A. 30^0 B. 60^0 C. 45^0 D. 37^0

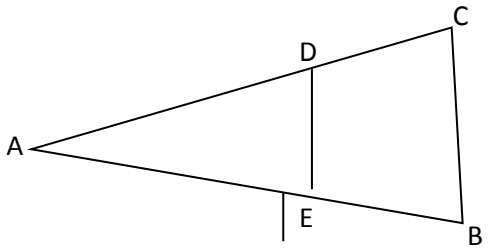
31. β = _____ A. 60^0 B. 30^0 C. 37^0 D. 45^0

Use the figure below to answer questions from 32-33.



32. $\overline{AB}$ = _____ A. 10 B. 5 C. 40 D. none

33. $\overline{BC}$ = _____ A. 87 B. 8.7 C. 17.4 D. 174



In the figure $\Delta ABC \sim \Delta AED$ ***with AD = 12Cm, DE = 2cm, AE = 4cm & BC = 9cm, use this figure to answer to answer Q 34 Q 37.***

34. $\overline{AB}$ = _____ A. 18 B. 20 C. 13 D. 7

35. $\overline{BE}$ = _____ A. 8 B. 9 C. 18 D. 14

36. $\overline{AC}$ = _____ A. 54 B. 42 C. 32 D. 62

37. DC =_____ A. 22 B. 12 C. 42 D. 34

38. Which one of the following is always **false**?

A. Two congruent polygons necessarily similar.

B. Congruence is a similarity where the constant of proportionality is 1.

C. Two similar polygons necessarily congruent.

D. All are true

39. From a point on the ground 300 meter from the foot at a tree, the angle to elevation is 60^0 ,then the height is

A. 2.61 B. 26.1 C. 261 D. none

40. A ladder 13m long is resting against vertical wall, the foot of the ladder being 5 meter away from the wall, then what is the height at the wall?

A. 18 B. 8 C. 12 D. none

1. Find x to the nearest tenth.

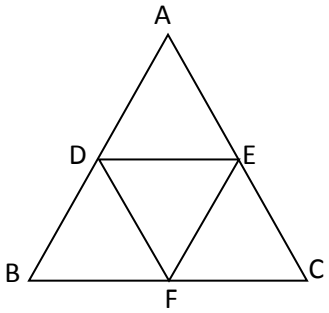
A. 6.9 AD = 12

B. 8.0 DC = 4

C. 13.9

D. 15.0

2. In the figure bellows, all triangles are equilateral. If $|DE| = 6cm$, what is the total perimeter of all triangles seen in the figure?



A. 48

B. 75

C. 96

D. 108

3. $a.c > 0$

$b^2.a > 0$

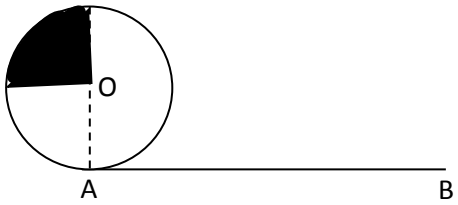
$b^3.a^2.c^5 < 0$

The numbers a, b and c are integers. Which one of the following **is true** about their signs? (Signs are given in order i.e. a, b, c respectively)

A. - , + , + B. + , - , + C. - , - , + D. - , - , -

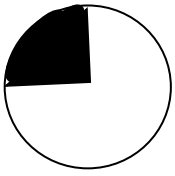
4. The total surface area of a right circular cylinder is 884π cm2 and find altitude is if the radius is 2cm

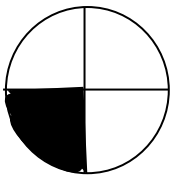
A. 17cm B. 19cm C. 18cm D. 20cm

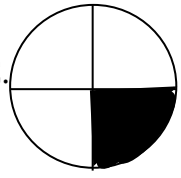
5. 

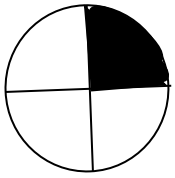
R = 40cm (circumference)

In the graph point A and O lies vertically on the same line. When the circle is brought to point B, what would be the shape of the circle?

A. 

B. 

C. 

D. 

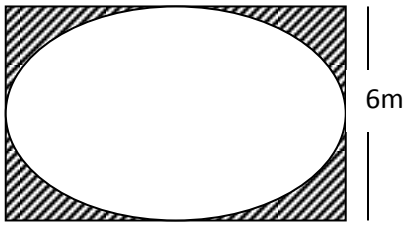
6. What is the area of the shaded region in the square ABCD if its sides are 4cm?

A. $18m^2 - 9\pi\ m^2$

B. $6m^2 - 8\pi\ m^2$

C. $6\pi\ m^2 - 36m^2$

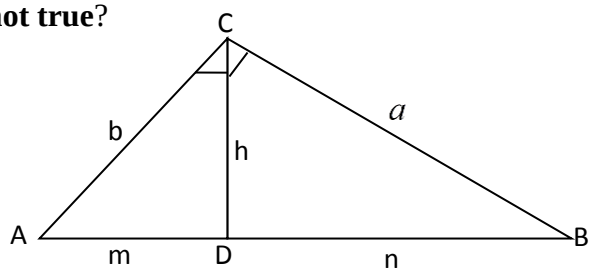
D. $36m^2 - 9\pi\ m^2$



7. Which of the following plane figures have always perpendicular and congruent diagonals?

A. Rectangle B. square C. Rhombus D. parallelogram

8. In the figure below ΔABC is right angle at C. CD Is perpendicular to AB if $AD = m$ $DB = n$, then which of the following **is not true**?



A. $h^2 + n^2 = a^2$

B. $b^2 = m^2 + mn$

C. $b^2 = h^2 + m^2$

D. $a^2 = mn$

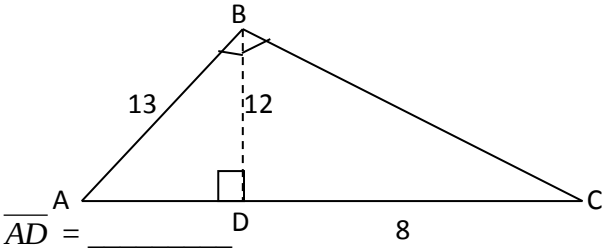
9. In the figure below if $BC = 8cm$ and $AB = 10cm$, then the value of $\frac{\cos\theta}{\sin\theta} + \frac{\sin\theta}{\cos\theta}$ is

A. $5/6$ B. $25/12$ C. $12/25$ D. 1

10. The lateral surface area of a right circular cylinder is $240cm^2$ and the circumference of the bases is 24cm. Find the altitude of the cylinder.

A. 48cm B. 2cm C. 20cm D. 10cm

<u>Based on the figure below answer the questions from 10-12.</u>



ABC is right angle

ADB is right angle

11. $\overline{AD}$ = _____

A. 25cm B. 10cm C. 5cm D. 15cm

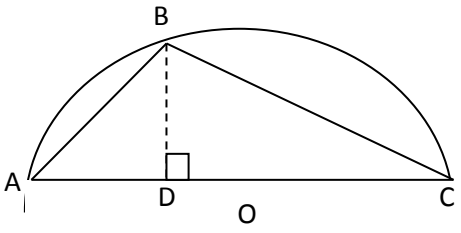
12. $\overline{BC}$ = _____

A. $\sqrt{106}$ B. $\sqrt{104}$ C. $\sqrt{114}$ D. none

13. AC = _____

A. 40 B. 5 C. 13 D. 14

14. In the figure below O is the center of the semicircle ABC



If BD = 7cm

BC = 25cm find the radius of the circle.

A. $\frac{625}{48}$ B. $\frac{625}{24}$ C. $\frac{25}{155}$ D. $\frac{15}{25}$

15. A ladder 20m long leans against a wall and makes an angle of 300 with the ground. How far from the wall is the foot of the ladder?

A. $10\sqrt{3m}$ B. 60m C. $20\sqrt{3m}$ D. 30m

16. If the diagonal of a square is 12cm, find the side length of square.

A. 144cm B. 72cm C. $2\sqrt{6}cm$ D. $6\sqrt{2}cm$

17. Find the total surface area of the cube with side length $4cm^2$.

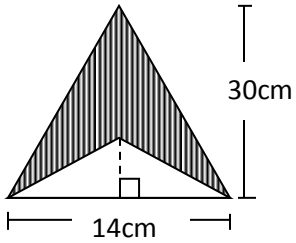
A. $96cm^2$ B. $36cm^2$ C. $16cm^2$ D. $48cm^2$

18. The radius of a circular cylinder is 7cm. If the height of the cylinder is 10cm, what is the total surface area of the cylinder? (use $\pi = \frac{22}{7}$)

A. $728cm^2$ B. $590cm^2$ C. $748cm^2$ D. $440cm^2$

19. Find the area of the shaded region.

A. $112cm^2$
B. $210cm^2$
C. $98cm^2$
D. $118cm^2$



20. Which of the polygon **is not** a regular polygon?

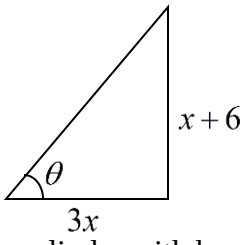
A. Equilateral B. square C. Rhombus D. regular pentagon

21. Each interior angle of a regular n-side polygon measures 1560. How many sides does the polygon have?

A. 18 B. 12 C. 13 D. 15

22. From the figure below, what is the value of x if $\tan\theta = 4/3$?

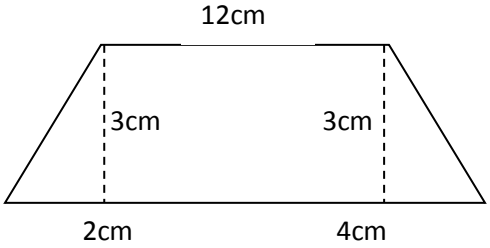
A. 4
B. 2
C. 3
D. 6



23. The altitude of a right circular cylinder with base radius 3cm is 10cm. What is the volume of a cylinder?

A. $90\pi cm^3$ B. $30\pi cm^3$ C. $13\pi cm^3$ D. $\frac{10}{3}\pi cm^3$

24. ABCD is a trapezium with $\overline{AB} // \overline{CD}$ as shown in the figure below. What is the area of the trapezium ABCD?



A. $45cm^2$

B. $48cm^2$

C. $40cm^2$

D. 36cm

25. The dimensions of a box are 12cm by 9cm by 6cm. A small cubical box measures 2cm along each side. How many of these small boxes fit into the bigger box?

A. 48 B. 68 C. 16 D. 81

26. A square and an equilateral triangle have the same perimeter. Each side of the triangle is 8cm. what is the area of the square?

A. $36cm^2$ B. $64cm^2$ C. $16cm^2$ D. $4cm^2$

27. The perimeter of rectangular field is 300m. If the length of the rectangle is 6m less than twice the width, what is the length of the field?

A. 52m B. 58m C. 39m D. none

28. Each interior angle of a regular n-side polygon measure 1500. How many sides does the polygon have?

A. 18 sides B. 15 C. 12 D. 14

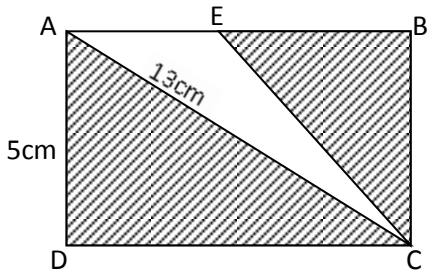
29. In the figure below, what is the area of the shaded part (E is the midpoint of AB) $\overline{AC} = 13cm$?

A. $65cm^2$

B. $45cm^2$

C. $75cm^2$

D. $60cm^2$



30. How many squares with side length 5cm are needed to cover a rectangle which is 20cm long and 5cm wide?

A. 5 B. 4 C. 8 D. 10

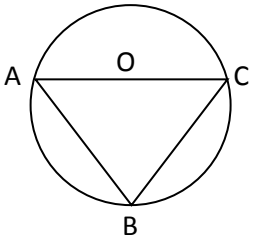
31. What is the circumference of the circle below if $\overline{AB} = 8cm, \overline{BC} = 6cm$? (O is the center)

A. 8π cm

B. 6π cm

C. 48π cm

D. 10π cm



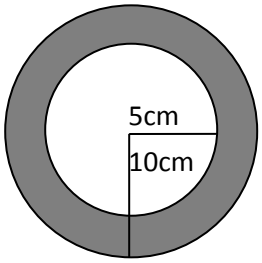
32. What is the area of the shaded part

A. $75\ \pi\ \text{cm}^2$

B. $50\ \pi\ \text{cm}^2$

C. $15\ \pi\ \text{cm}^2$

D. $60\ \pi\ \text{cm}^2$



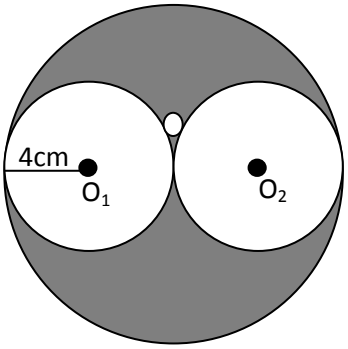
33. Find the area of the shaded part. (O is the center of the larger circle and O_1 and O_2 are center of the two congruent small circles)

A. $32\ \pi\ \text{cm}^2$

B. $16\ \pi\ \text{cm}^2$

C. $64\ \pi\ \text{cm}^2$

D. $8\ \pi\ \text{cm}^2$



34. The sum of the height and radius of a right circular cylinder is 9cm. The total surface area is $81\pi\ \text{cm}^2$. Find the radius.

A. 9cm B. 4.5cm C. 10cm D. $9/4$ cm

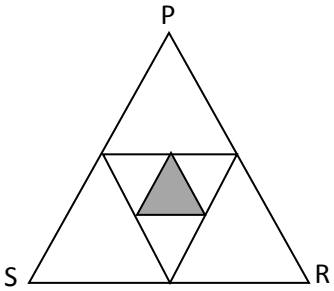
35. The triangles in the figure below are all equilateral. If the perimeter of the shaded triangle is 6cm, what is the perimeter of the triangle PRS?

A. 36cm

B. 48cm

C. 24cm

D. 12cm



36. Which of the following set of numbers **can not** be the lengths of a right angled triangle?

A. 6, 8, 10 B. 7, 24, 25 C. 8, 12, 15 D. 5, 12, 13

37. Which of the following plane figures have always perpendicular diagonals

A. Rectangle B. Trapezium C. Rhombus D. Parallelogram

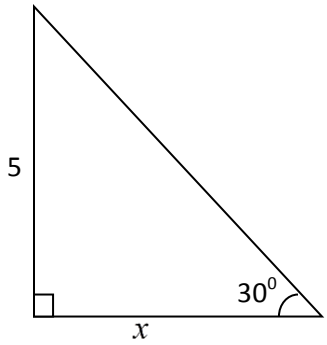
38. What is the value of x?

A. $5\sqrt{3}$ cm

B. $\frac{5}{\sqrt{3}}$

C. $25\sqrt{3}$

D. $\frac{25}{\sqrt{3}}$ cm



I. Choose the correct answer and write the letter of your choice on the answer sheet provided.

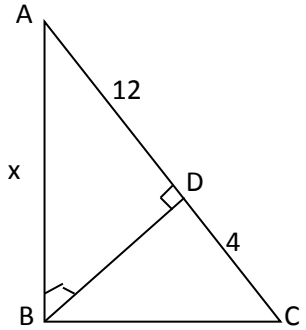
39. Find x to the nearest tenth.

E. 6.9

F. 8.0

G. 13.9

H. 15.0



AD = 12

DC = 4

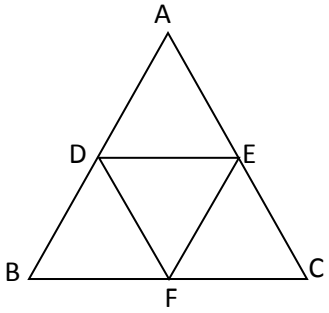
40. In the figure bellows, all triangles are equilateral. If $|DE| = 6cm$, what is the total perimeter of all triangles seen in the figure?

E. 48

F. 75

G. 96

H. 108



41. $a.c > 0$

$b^2.a > 0$

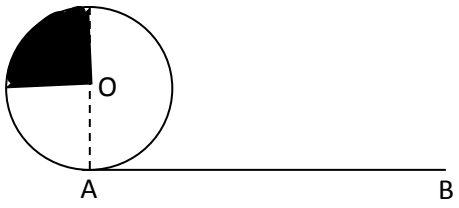
$b^3.a^2.c^5 < 0$

The numbers a, b and c are integers. Which one of the following **is true** about their signs? (Signs are given in order i.e. a, b, c respectively)

B. - , + , + B. + , - , + C. - , - , + D. - , - , -

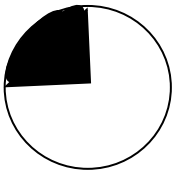
42. The total surface area of a right circular cylinder is 84π cm^2 and find the altitude if the radius is 2cm.

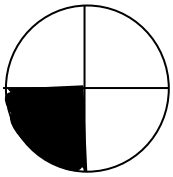
B. 17cm B. 19cm C. 18cm D. 20cm

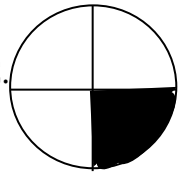
43. 

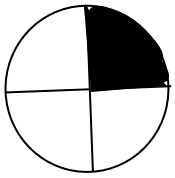
C = 40cm (circumference)

In the graph point A and O lies vertically on the same line. When the circle is brought to point B, what would be the shape of the circle?

B. 

B. 

C. 

D. 

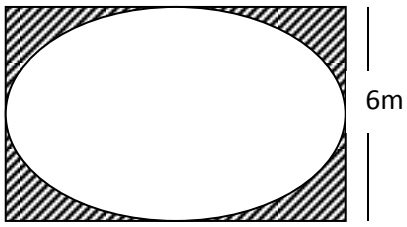
44. What is the area of the shaded region in the square ABCD if its sides are 6cm?

E. $18m^2 - 9\pi\ m^2$

F. $6m^2 - 8\pi\ m^2$

G. $6\pi\ m^2 - 36m^2$

H. $36m^2 - 9\pi\ m^2$



45. Which of the following plane figures have always perpendicular and congruent diagonals?

B. Rectangle B. square C. Rhombus D. parallelogram

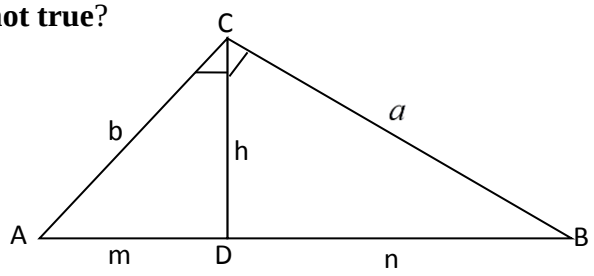
46. In the figure below ΔABC is right angle at C. CD Is perpendicular to AB if $AD = m$ $DB = n$, then which of the following **is not true**?

E. $h^2 + n^2 = a^2$

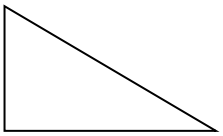
F. $b^2 = m^2 + mn$

G. $b^2 = h^2 + m^2$

H. $a^2 = mn$



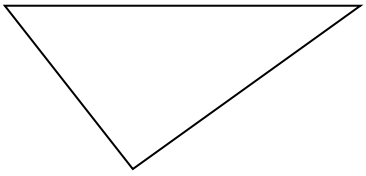
47. In the figure below if $BC = 8cm$ and $AB = 10cm$, then the value of $\frac{\cos\theta}{\sin\theta} + \frac{\sin\theta}{\cos\theta}$ is



B. $5/6$ B. $25/12$ C. $12/25$ D. 1

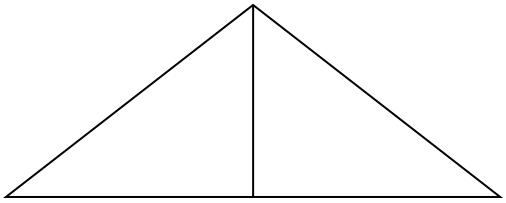
48. The lateral surface area of a right circular cylinder is $240cm^2$ and the circumference of the bases is 24cm. Find the altitude of the cylinder.

B. 48cm B. 2cm C. 20cm D. 10cm



49. $\overline{AD}$ = _____

B. 25cm B. 10cm C. 5cm D. 15cm



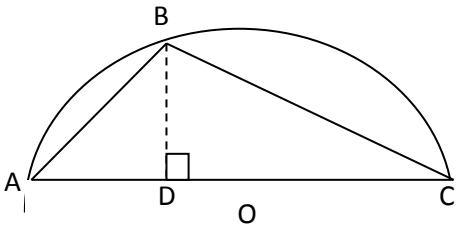
50. $\overline{BC}$ = _____

B. $9\sqrt{2}cm$ B. $4\sqrt{3cm}$ C. $3\sqrt{2cm}$ D. 3 cm

51. If the area of a square is 169 cm^2, find its perimeter.

B. 56 cm B. 52 cm C. 46 cm D. 48 cm

52. In the figure below O is the center of the semicircle ABC



If BD = 7cm

BC = 25cm find the radius of the circle.

B. $\frac{625}{48}$ B. $\frac{625}{24}$ C. $\frac{25}{155}$ D. $\frac{15}{25}$

53. A ladder 20m long leans against a wall and makes an angle of 30^0 with the ground. How far from the wall is the foot of the ladder?

B. $10\sqrt{3m}$ B. 60m C. $20\sqrt{3m}$ D. 30m

54. If the diagonal of a square is 12cm, find the side length of square.

B. 144cm B. 72cm C. $2\sqrt{6}cm$ D. $6\sqrt{2}cm$

55. Find the total surface area of the cube with side length $4cm^2$.

B. $96cm^2$ B. $36cm^2$ C. $16cm^2$ D. $48cm^2$

56. The radius of a circular cylinder is 7cm. If the height of the cylinder is 10cm, what is the total surface area of the cylinder? (use $\pi = \frac{22}{7}$)

B. $728cm^2$ B. $590cm^2$ C. $748cm^2$ D. $440cm^2$

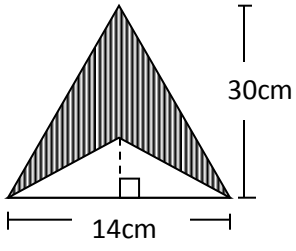
57. Find the area of the shaded region.

E. $112cm^2$

F. $210cm^2$

G. $98cm^2$

H. $118cm^2$



58. Which of the polygon **is not** a regular polygon?

B. Equilateral B. square C. Rhombus D. regular pentagon

59. Each interior angle of a regular n-side polygon measures 156^0. How many sides does the polygon have?

B. 18 B. 12 C. 13 D. 15

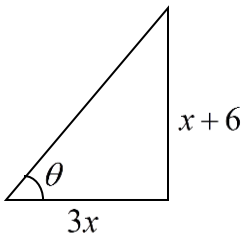
60. From the figure below, what is the value of x if $\tan\theta = \frac{4}{3}$?

E. 4

F. 2

G. 3

H. 6



61. The altitude of a right circular cylinder with base radius 3cm is 10cm. What is the volume of a cylinder?

B. $90\pi cm^3$ B. $30\pi cm^3$ C. $13\pi cm^3$ D. $\frac{10}{3}\pi cm^3$

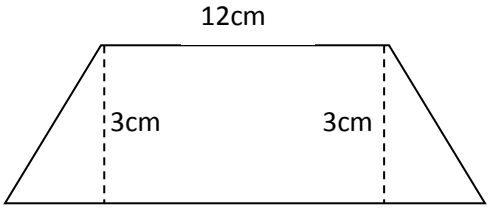
62. ABCD is a trapezium with $\overline{AB} // \overline{CD}$ as shown in the figure below. What is the area of the trapezium ABCD?

E. $45cm^2$

F. $48cm^2$

G. $40cm^2$

H. 36cm



63. The dimensions of a box are 12cm by 9cm by 6cm. A small cubical box measures 2cm along each side. How many of these small boxes fit into the bigger box?

B. 48 B. 68 C. 16 D. 99

64. A square and an equilateral triangle have the same perimeter. Each side of the triangle is 8cm. what is the area of the square?

B. $36cm^2$ B. $64cm^2$ C. $16cm^2$ D. $4cm^2$

65. The perimeter of rectangular field is 300m. If the length of the rectangle is 6m less than twice the width, what is the length of the field?

B. 52m B. 58m C. 39m D. 98m

66. Each interior angle of a regular n-side polygon measure 150^0. How many sides does the polygon have?

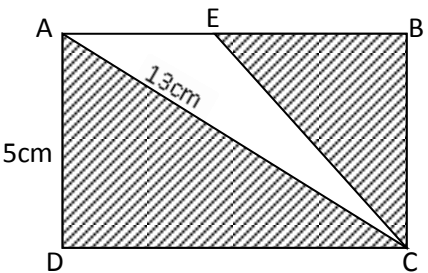
B. 18 sides B. 15 C. 12 D. 14

67. In the figure below, what is the area of the shaded part (E is the midpoint of AB) $\overline{AC} = 13cm$?

E. $65cm^2$

F. $45cm^2$

G. $75cm^2$



H. $60cm^2$

68. How many squares with side length 5cm are needed to cover a rectangle which is 20cm long and 5cm wide?

B. 5 B. 4 C. 8 D. 10

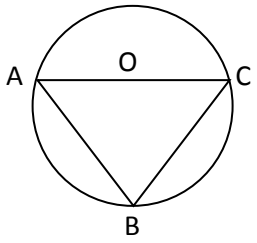
69. What is the circumference of the circle below if $\overline{AB} = 8cm, \overline{BC} = 6cm$? (O is the center)

E. 8π cm

F. 6π cm

G. 48π cm

H. 10π cm



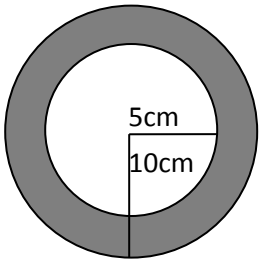
70. What is the area of the shaded part

E. 75 π cm^2

F. 50 π cm^2

G. 15 π cm^2

H. 60 π cm^2



$r_1 =$ 5cm (radius of the smaller circle)

$r_2 =$ 10cm (radius of the larger circle)

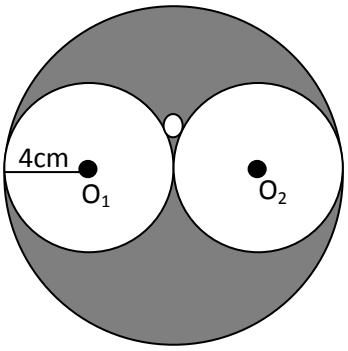
71. Find the area of the shaded part. (O is the center of the larger circle and O_1 and O_2 are center of the two congruent small circles)

E. 32 π cm^2

F. 16 π cm^2

G. 64 π cm^2

H. 8 π cm^2



72. The sum of the height and radius of a right circular cylinder is 9cm. The total surface area is 81π cm^2. Find the radius.

B. 9cm B. 4.5cm C. 10cm D. $9/4$ cm

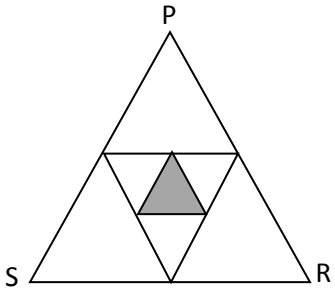
73. The triangles in the figure below are all equilateral. If the perimeter of the shaded triangle is 6cm, what is the perimeter of the triangle PRS?

E. 36cm

F. 48cm

G. 24cm

H. 12cm



74. Which of the following set of numbers **can not** be the lengths of a right angled triangle?

B. 6, 8, 10 B. 7, 24, 25 C. 8, 12, 15 D. 5, 12, 13

75. Which of the following plane figures have always perpendicular diagonals

B. Rectangle B. Trapezium C. Rhombus D. Parallelogram

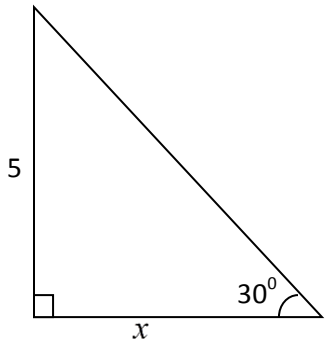
76. What is the value of x?

E. $5\sqrt{3}$ cm

F. $\frac{5}{\sqrt{3}}$

G. $25\sqrt{3}$

H. $\frac{25}{\sqrt{3}}$ cm



77. If the area of a triangle is 16 cm^2 and the base is 4cm, find its height.

A. 4cm B. 2cm C. 8cm D. 6cm

78. If the area of a circle is $16\pi cm^2$, find its diameter.

A. 4cm B. 16cm C. 2cm D. 8cm

1. Which of the following is a **true** statement?

A. 64 is a prefect square B. 1 is a square of -1 C. $\sqrt{18} = 3\sqrt{2}$ D. all of the above

2. $2^2 \times 3^2 \times 1^2$ = _____.

A. 24 B. 72 C. 36 D. 48

3. The lowest term of the ratio of 2kg to 3000 g is _____.

A. 1:1500 B. 3:2 C. 2:3 D. none

4. An alloy consists of 240 g of copper, zinc & tin in the ration of 2:3:5 respectively. The amount of tin in the alloy is _____.

A. 48g B. 72g C. 120g D. none

5. Which one is **false** about a proportion of two ratios a:b = C:d?

A. da = bc C. a is the 1st terms of the proportion

B. a & d are the extremes D. none

6. If $\sqrt{98.21} = 9.91$, then $\sqrt{0.9821}$ = _____.

A. 0.0991 B. 0.991 C. 991 D. none

7.What is the value of x in $\sqrt{x-6} = 2$?

A. 4 B. 8 C. 10 D. -2

8. Which of the following **is not** equal with rest of them?

A. 2% of 150 B. 5% of 80 C. 12% of 25 D. 80% of $\frac{15}{4}$

9. A woman spends 40 birr for transportation every month. If this is just 16% of her monthly earning: what is her monthly earning?

A. 250 birr B. 400 birr C. 540 birr D. 640 birr

10. What is the solution set of the equation 5(3x – 1) = 4x -3?

A. $\frac{2}{11}$ B. 2 C. ½ D. none

11. In the inequality $\frac{3c-2}{6} \geq \frac{c+2}{2}$, which of the following can be possible value of c?

A. lN B. W C. lR D. ϕ

12. $|5x-1| = 9$ x = _____.

A. 2 or 8/5 B. -2 or 8/5 C. 2 or -8/5 D. -2 or -8/5

13. $2|5-x| = 16$, then x = _____.

A. 3 or 13 B. -3 or -13 C. -3 or 13 D. 3 or -13

14. $\frac{x+5}{3x} = \frac{10}{x}\frac{-4}{3}$

A. 5 B. -5 C. $\frac{1}{5}$ D. $-\frac{1}{5}$

15. If $\frac{3}{5}, \frac{4}{7}, \& \frac{1}{4}$ are written in increasing order, then which of the following is **correct**?

A. $\frac{3}{5}, \frac{1}{4}, \frac{4}{7}$ B. $\frac{1}{4}, \frac{3}{5}, \frac{4}{7}$ C. $\frac{4}{7}, \frac{3}{5}, \frac{1}{4}$ D. $\frac{1}{4}, \frac{4}{7}, \frac{3}{5}$

16. Subtraction is always practicable in the set of

A. Positive rational numbers C. counting numbers

B. integers D. negative rational numbers

17. If x + y = 6 & y – x = 4, then $x^2 - y^2$ = _____.

A. 25 B. 26 C. 24 D. none

18. Which of the following equations is not equivalent to $\frac{2x}{5} - \frac{2}{8} = x$?

A. x - $\frac{5}{16} = 0$ B. $\frac{4x-20x-5}{20} = 0$ C. 4x – 20x – 5 = 0 D. x = $\frac{-5}{12}$

19. If the Doman is the set of whole numbers, what are the possible values of 2 – x > 0?

A. {0, 1, 2, …..} B. {x / x < 2} C. {0,1} D. {x / x > 2 }

20. $\frac{x+3}{6}-\frac{x-5}{4}=\frac{3}{8}$, then x = _____.

A. $\frac{33}{2}$ B. $\frac{-33}{2}$ C. $\frac{2}{33}$ D. $\frac{-2}{33}$

21. If P (-10,-6) & Q (2,0), then the slope would be

A. 2 B. -2 C. ½ D. $\frac{-1}{2}$

22. Point (2, 0) lies on the line ax + 5y =10, then a = _____.

A. -5 B. 0 C. 5 D. none

23. Which one of the following is **true** about 4x – y + 12 = 0?

A. y = -4x + 12 B. x = $\frac{1}{4}y-3$ C. x = $\frac{-1}{4}y+3$ D. x- intercept is (0,3)

24. P ($\frac{-1}{4}$,4) & Q ($\frac{-1}{4}$,4), then the slope is equal to _____.

A. -8 B. 8 C. $\frac{1}{8}$ D. 0

25. In which one of the following quadrant is the value of x & y negative & positive respectively?

A. 4^{th} quadrant B. 3^{rd} quadrant C. 2^{nd} quadrant D. 1^{st} quadrant

26. P (4, 2) & Q (t, 0) & the slope is 2. What would be the value of t?

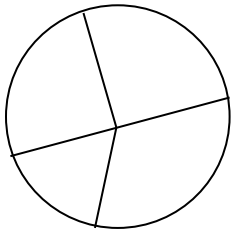
A. 5 B. 3 C. 4 D. none

27. How long will it take birr 500 to get birr 50 simple interest at a rate of 8%?

A. 2 years B. 1 ¼ years C. 2 ½ years D. 3 years

28. The pie chart below slows Ato Abebe's expense & saving for each month. If his monthly income is birr 1500, the monthly fuel expense in birr is _____.

A. 54 B. 150 C. 225 D. 125



29. Which of the following statement is **false**?

A. 20% of 30 is equal to 30% of 20

B. $\frac{3}{8}$ expressed as a parentage is equal to 37.5%

C. 5% of 5 is equal to 1

D. $\frac{2}{3}$ of 12 is equal to 8

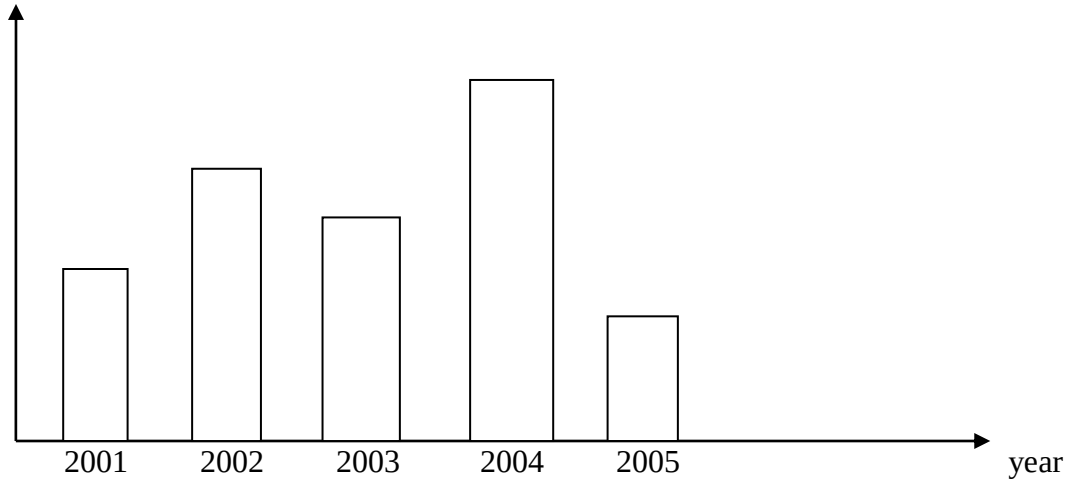
30. The value of a car which was 10,000 birr in September is decreased by 20% in June. What is the value of the car in June?

A. 2,000 birr B. 20,000 birr C. 8,000 birr D. 6,100 birr

31. If birr 56,000 is divided among A, B& C in the ratio 5, 7, 8 respectively, what is the amount of C?

A. 22,400 birr B. 19,600 birr C. 14,000 birr D. none

The following bar chart slows the scales of a firm over five years in thousand birr. (Answer questions 34-38)



32. What percent of the total sales during the five years is the sale of 2001?

A. $\frac{200}{13}$ B. $\frac{2000}{13}$ C. 26 D. none

33. What was the total sale during the five years?

A. 260,000 B. 26,000 C. 260 D. none

34. What parent of increase is there in 2002 from that of 2001?

A. $\frac{10}{13}$ B. $\frac{100}{13}$ C. $\frac{1000}{13}$ D. none

35. In which year the firm sales the highest?

A. 2005 B. 2003 C. 2002 D. none

36. What was the sale of the firm in 2003?

A. 50 birr B. 40 birr C. $\frac{5}{100}$ birr D. 50,000 birr

37. If P (2, 1) and Q (-1, 3), then the equation of the line would be

A. $y = \frac{2}{3}x + \frac{7}{3}$ B. $y = -\frac{2}{3}x + \frac{7}{3}$ C. $y = \frac{2}{3}x - \frac{7}{3}$ D. none

38. Which one of the following is TRUE about the line equation $3y - 2x + 6 = 0$?

A. The slope is $\frac{-2}{3}$ B. the y-intercept is 2 C. $y = \frac{2}{3}x - 2$ D. all

39. Which one of the following is **False** about –y – x + 4 = 0?

A. x = -y + 4 B. y= x – 4 C. y- intercept is 4 D. x- intercept is -4

40. Find the slope & y-intercept of 2x – 5y + 10 = 0?

A. m= $\frac{2}{5}$ & –5 B. m= $\frac{-2}{5}$ & 2 C. m= $\frac{2}{5}$ & 2 D. m= $\frac{5}{2}$ & 2

1. The graph of the line of the form y = mx; m > 0 passes through the _____ and _____ quadrants.

A. III and IV B. II and III C. I and III D. II and IV

2. Which of the following is **true** about the graph of the line of the form y = mx ($m \in Q$)?

A. The line is horizontal C. the line passes through the origin

B. the line is vertical D. all

3. What is the slope of the equation Y = -X?

A. -1 B. 1 C. 0 D. it has no slope

4. Which of the following **is not true** about similar figures?

A. All congruent figures are similar C. All squares are similar

B. All circles are similar D. All similar figures are congruent

5. Which of the following figures are always **similar**?

A. Any two rectangles C. any two equilateral triangle

B. Any two isosceles triangles D. any two quadrilateral

6. What is the slope of a vertical line?

A. 0 B. 1 C. undefined D. -1

7. A piece of rope is 24cm long. The rope is cut in to two pieces in the ratio of 2:1. What is the length of the shorter rope?

A. 6cm B. 8cm C. 16cm D. 12cm

8. Which of the following ordered pairs belong to the second quadrant?

A. (-1,1) B. (-1,-1) C. (1,-1) D. (1,1)

9. Which of the following is **true** about the line with equation y = 1 – 2x?

A. The slope of the line is - ½ C. the x intercept is ½

B. The y-intercept is -2 D. the line passes through the origin

10. If 80% of a certain number is 120, what is the number?

A. 150 B. 120 C. 130 D. 180

11. The ratio of the age of a boy to the age of his father is 2:3. If the sum of their ages is 75 years, how old is the boy?

A. 50 B. 75 C. 80 D. 30

12. What is the equation of the line passing through the points (0,1) an (2,0)?

A. 2y – x + 2 = 0 B. 2y + x – 2 = 0 C. 2y + x + 2 = 0 D. none

13. What is the slope of a line whose equation is 5x – 3y + 1 = 0?

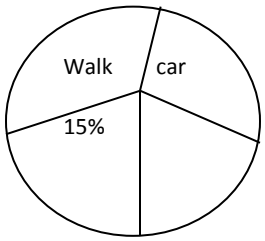
A. $\frac{3}{5}$ B. $\frac{-3}{5}$ C. 5/3 D. $-\frac{5}{3}$

14. A factory has 1,200 workers of which 720 are males and the rest are females. What percent of the workers are female?

A. 48% B. 40% C. 30% D. 12%

15. From the pie chart below a survey was conducted by asking 400 students in a town how they traveled to school. What is the number of students that travel to school by car?

A. 40
B. 100
C. 120
D. 140

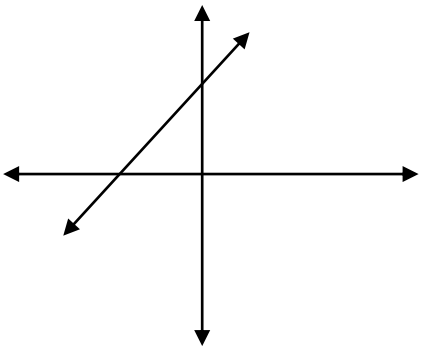


16. Which of the following equation has a graph that is a horizontal line?

A. 5x – 4y = 1 B. 5y – 13 = 2 C. x – y = -1 D. 6x + 7 = 9

17. What is the equation of the graph below

A. Y = -x +2 C. y = 2x + 2
B. Y = y – 2 D. y = 2x + 1



18. If $y = \frac{x}{4}$ then $\frac{x}{y}$ is equal to

A. ¼ B. x C. y D. 4

19. Figure ABCD and EFGH are similar. If $\overline{AB}$ = 6cm, BC = 7cm and EF = 18cm what is the length of $\overline{FG}$?

A. 14cm B. 21cm C. 12cm D. 16cm

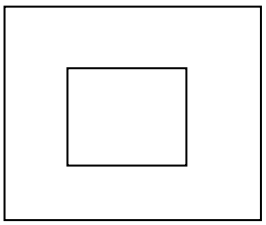
20. The sides of a triangle are 5, 6 and 10. Find the length of the longest side of a similar triangle whose shortest side is 15?

A. 10 B. 15 C. 18 D. 30

21. At a certain time of a day, the shadow of 120cm boy is 4800 cm. The shadow of a nearby flag pole at this same time is 40,000cm. What is the length of the flag pole?

A. 80,000cm B. 10,000cm C. 8000cm D. 1,000cm

22. If square ABCD is enlarged by central stretching to WXYZ, what is the scale for the enlargement as shown below?



A. 2.5

B. 4cm

C. 10cm

D. 5cm

23. The ratio of 95 to 115 is

A. 17:11 B. 19:23 C. 17:19 D. $\frac{13}{23}$

24. Divide the number 512 in the ratio 5:3 then find the two numbers.

A. 320 and 192 B. 320 and 60 C. 50 and 462 D. 70 and 442

25. If a:b = 7:8 and b:c = 12:7 find a:c in its simplest form.

A. 2:3 B. 3:2 C. 9:6 D. B and C

26. The measure of the angles of a triangle is in the ration 2:3:4 find each angle.

A. 40^0, 60^0, 80^0 B. 60^0,50^0,70^0 C. 90^0,0^0,90^0 D. 35^0,65^0,80^0

27. What is the length of the image of a 15cm long segment after central stretching with a scale factor $\frac{1}{3}$?

A. 45cm B. 2cm C. 5cm D. 30cm

28. Which of the following statement is **true**?

A. Any two squares are similar C. any two triangles are similar

B. Any two rectangles are similar D. any two parallelograms are similar

29. In the word "MATHEMATICS" the ratio of consonants to vowels is

A. 4:7 B. 3:5 C. 7:4 C. 5:3

30. If 2A:3B = 3:4 and 3B:2C = 8:9 then A:C is equal to

A. 3:2 B. 32:27 C. 2:3 D. 27:32

31. The ratio of the age of a boy to the age of his father is 2:5. If the sum of their ages is 105. How old is the father?

A. 50 year B. 75 years C. 30 years D. 40 years

32. If 12% of a certain number is 120. What is the number?

A. 500 B. 10,000 C. 1000 D. 1200

33. If $\frac{x}{7} = \frac{9}{4}$ what is the value of x?

A. 9 B. 14 C. 18 D. 12

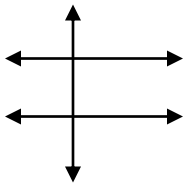
34. The ratio of two numbers is 7:3 and their sum is 50. Find their difference.

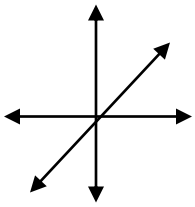
A. 20 B. 15 C. 25 D. 15

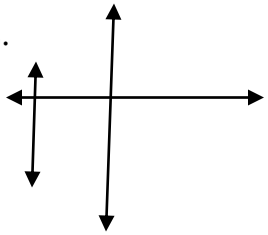
35. If 13 kilograms of sugar cost birr 130, then 26 kilograms cost _____.

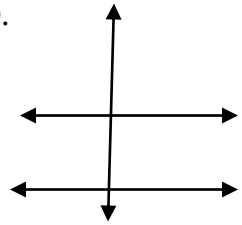
A. 260 birr B. 130 birr C. 13,000 birr D. 1,300 birr

36. What is the graph of x = -2?

A. 

B. 

C. 

D. 

37. What is the equation of the line passing through the points (1,5) and (0,10)?

A. y = 5x +5 B. y = -5x + 5 C. y = 5x + 10 D. y = -5x + 10

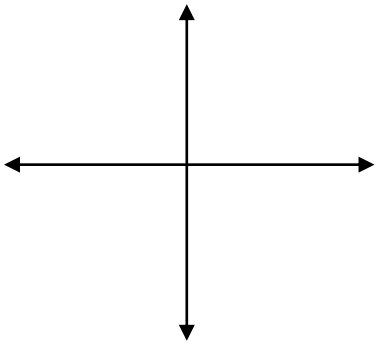
38. What is the coordinate of the point A below

A. (0,-2)

B. (-2,0)

C. (-2,1)

D. (-2,2)



39. Find 30% of 70

A. 21 B. 42 C. 30 D. 60

40. Which quadrant has negative value for both x and y coordinates?

A. I B. II C. III D. IV

1. At the beginning of the year the price of a car was 60,000 Birr. During the year its value was decreased by 15%. The price of a car had been

A. 45,000 Birr B. 50,000 Birr C. 49,000 Birr D. 51,000 Birr

2. The population of Kara is 69,000. What will be its Population after a year if its Population is increased by 5%?

   A. 65550 B. 72450 C. 74450 D. none

3. A merchant bought 200 eggs with birr 2.00 each and sold them with birr 2.50 each. What was his profit or loss percent?

   A. 50% profit B. 25%loss C. 25% profit D. 50% loss

4. Ashenafi bought an article with birr 250 and sold if with 30% profit. What was the selling price of the article?

   A. 275 birr B. 420 birr C. 325 birr D. 500 birr

5. How long will it take for birr 1,200 to give birr 360 simple interest at the rate of 6% per annum?

   A. 4 years B. 3 years C. 5 years D. 6 Years

6. The price of a shirt in a shop is 160 birr plus 15% vat. What would be the total cost of the shirt?

   A. 254 birr B. 175 birr C. 184 birr D. 204 birr

7. At what rate will 500 birr becomes birr 900 in 10 years?

   A. 6% B. 7% C. 8% D. 10%

8. Ato Alemu invested 20,000 birr at a rate of 5% simple interest for 6years. How much simple interest made after 6 years?

   A. 3000 birr B. 4000 birr C. 6000 birr D. 10000 birr

Answer 9-12 based on the following data below.

12, 12, 14, 12, 15, 12, 15, 12, 14, 16

9. The value of the mean is

   A. 24.5 B. 34.1 C. 13.4 D. none

10. The value of the mode is

    A. 15 B. 12 C. 14 D. 16

11. The range is

    A. 28 B. 14 C. 4 D. 10

12. The median is

    A. 14 B. 12 C. 26 D. 13

13. The mean of weight of ten students is 60kg. The individual weights of nine of them are 45, 41, 48, 5, 53.5, 54, 70, 69, 82, 74kg. Find the weight of the tenth student.

    A. 53kg B. 73kg C. 48kg D. 63kg

14. What number should be included in the following data so that the median is 7?

    5, 10, 4, 6, 12

    A. 9 B. 10 C. 8 D. 11

15. The mean of five numbers is 20 and the mean of 3 numbers is 30. What is the mean of all eight numbers?

A. 25.5 B. 23.75 C. 24.25 D. none

16. A side of a regular Hexagon is 8cm long. The perimeter of a similar polygon is 60cm. What is the length of a side of the larger polygon?

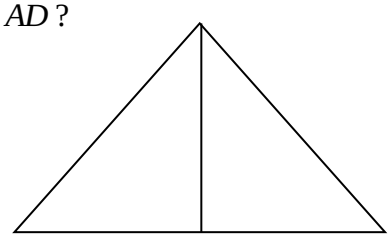
A. 12cm B. 6cm C. 10cm D. 8cm

17. Given ΔABC and ΔDEF if $\frac{AB}{DE}=\frac{BC}{EF}=\frac{AC}{DF}$ then which of the following theorems shows ΔABC is similar to ΔDEF?

A. AA similarity theorem
B. AAA similarity theorem
C. SAS similarity theorem
D. SSS similarity theorem

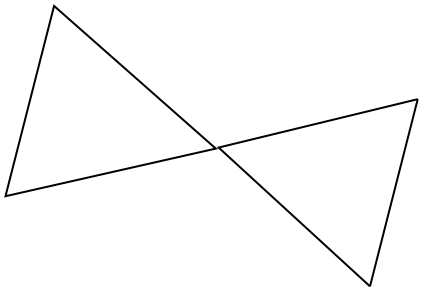
18. In the figure given below ΔBDC ~ ΔADC, m(<ACB) = 90^0 and $\overline{CD} \perp \overline{AB}$ if CD = 10cm and BD = 6cm then what is the length of $\overline{AD}$?

A. 6.5 cm
B. 6 cm
C. 7.5cm
D. 9cm



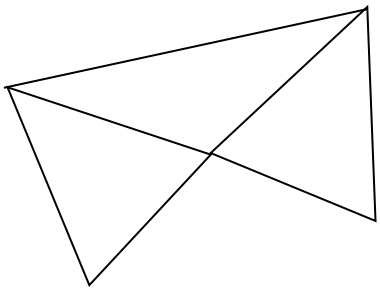
19. In the figure given below $P\overline{Q} \perp \overline{QT}, \overline{ST} \perp \overline{QT}$ and P, R, and S are on the same line. If ΔPQR ~ ΔSTR then which of the following similarity theorem supports your answer?

A. SAS theorem
B. AA theorem
C. AAS theorem
D. SSS theorem



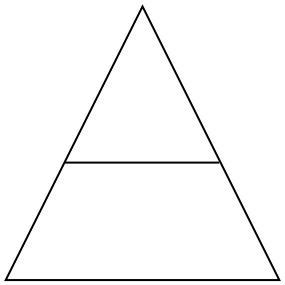
20. In the figure given below $\Delta ABC \sim \Delta CEA$ if AC = 10cm, CE = 8cm and BC = 5 cm what is the length of $\overline{AE}$?

A. 4cm
B. 3cm
C. 5cm
D. 6cm



21. In $\Delta DEF, BE$ // EF, DB = 4cm , DE = 12cm and FC = 30cm then CD = _____.

A. 40cm
B. 20cm
C. 12cm
D. 15cm

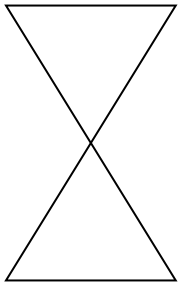


22. Δ ABC ~ Δ DEF perimeter of Δ ABC is 12cm and perimeter of Δ DEF is 24cm. What is the area of Δ DEF if the area of Δ ABC is 24 cm^2?

A. 48cm^2 B. 36cm^2 C. 24cm^2 D. 96cm^2

23. In the figure given below $\overline{AB} // \overline{DC}$ then which one of the following condition is sufficient to show that Δ AOB ~ Δ DOC?

A. SAS similarity theorem
B. SSS similarity theorem
C. Definition of similarity triangle
D. AA similarity theorem



24. If two triangles are similar and then the length of one triangle is 5 times that of the corresponding sides of the other, what is the ratio of area of larger triangle to smaller triangle?

A. 1:5 B. 5:1 C. 25:1 D. 1:25

25. If the sides of a polygon is 6, 12, 10, 18, and 34cm and the perimeter of similar polygon is 120cm. Find the length of the largest side of the larger polygon?

A. 49cm B. 27cm C. 51cm D. 53cm

26. Two polygons are similar. Their areas are 81cm^2 and 25cm^2 respectively. The side of first is 18cm long. Find the corresponding side of the other polygon.

A. 25cm B. 20cm C. 10cm D. none

27. If Δ ABC ~ Δ DEF and a(Δ ABC) = 225cm^2 and area of triangle (Δ DEF) = 100cm^2 then the ratio of the perimeter of Δ ABC to that of the perimeter of Δ DEF is

A. $\frac{2}{3}$ B. $\frac{5}{2}$ C. $\frac{3}{2}$ D. $\sqrt{5}/2$

28. If Δ ABC ~ Δ DEF, $\overline{AB} = 8cm, \overline{BC} = 10cm, \overline{AC} = 6cm \overline{DE} = 4cm, EF = 5cm / DF = 3cm$ a(Δ ABC) = 20cm^2 then the area of Δ DEF is _____.

B. 8cm^2 B.5cm^2 C. 32cm^2 D. 10cm^2

29. The length of the sides of ΔPQR are 20, 15, 10cm and the length of the side of ΔMNT are 12, 9, 6cm. respectively then the ratio of the areas of larger triangle to that of the smaller triangle is equal to

A. 5:3 B. 5:9 C. 25:3 D. 9:5

30. Rectangle ABCD is similar to rectangle EFGH given that AB = 28cm BC = 16cm and EF = 42cm. Calculate the length of FG.

A. 26 cm B. 24cm C. 30cm D. 15cm

31. The ratio of the sides of two similar polygons is 5:2 the area of the smaller is 48cm^2. What is the area of the larger polygon?

A. 225cm^2 B. 300cm^2 C. 400cm^2 D. 120cm^2

32. What is the length of the image of 40cm long Segment after central stretching with scale factor ¼?

A. 10cm B. 160cm C. 80cm D. none

33. Which one of the following is **false** about center of central enlargement?

A. The image of center 0 is 0 itself

B. If K> 1 the image figure is larger than the original figure.

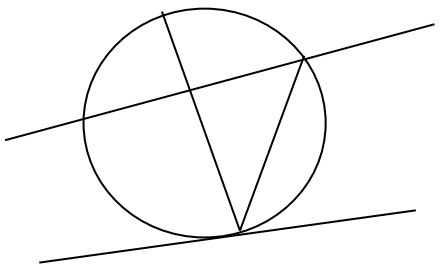
C. if O <K<1 the image figure is larger than the original figure.

D. if K = 1 the image figure is congruent to the object figure.

34. A part of a circle which is less than the semi circle is called

A. Secant line B. semi circle C. minor are D. major are

Answer the following based on picture given below circle 0.



35. Line $\overline{AD}$ is _____ of a circle 0.

A. Secant line B. diameter C. tangent line D. are

36. Arc $\overset{\frown}{APD}$ is _____

A. Minor arc B. major arc C. semi circle D. none

37. Which one of the following is **false** about the above circle?

A. arc ADF is major arc C. point A is point of tangency

B. $\overline{PF}$ is diameter of a circle D. arc PDF is semi arc

38. Which one of the following line is tangent line to the circle?

A. $\overline{AD}$ B. $\overline{BE}$ C. $\overline{PF}$ D. $\overline{AF}$

39. In the figure given above Q is interior point of circle O. Which one of the following lines **is not** possible to draw through the point Q?

A. A chord B. a secant line C. a tangent line D. a diameter

40. If the corresponding sides of two similar triangles are 8cm and 12cm respectively. If the area of the first triangle is $4cm^2$ then what is the area of the second triangle?

A. $9cm^2$ B. $18cm^2$ C. $16cm^2$ D. $6cm^2$

1. Which one of the following is **true** about relational numbers?

A. $Q \subseteq Z$ B. $Q \subseteq Q^-$ C. $Q^- \not\subseteq Q^+$ D. $Q^+ \subseteq Q^-$

2. Which one of the following is **FALSE** about Integers?

A. The product of two integers is an integer
B. The sum of two integers is an integer
C. The difference of two integers is not an integer
D. The quotient of two integers is not an integer

3. Which one of the following is **true** about whole numbers?

A. The product of two whole numbers is always a whole number.
B. The sum of two whole numbers is not always a whole number.
C. The difference of two whole numbers is always a whole number.
D. The quotient of two whole numbers is always a whole number.

4. Which one of the following is **FALSE**?

A. $O \in Z$ B. $O \in Q$ C. $O \in Q^+$ D. $O \notin Q^-$

5. Which one of the following is **true**?

A. $Q = \{ \frac{a}{b} a,b \in Z, a \neq 0 \}$
B. $Q = \{ \frac{a}{b} : a,b \in z \}$
C. $Q = \{ \frac{a}{b} : a,b \in z, b \neq 0 \}$
D. none

6. Which one of the following is **FALSE**?

A. $\frac{5}{2} \in W$ B. $\frac{1}{2} \in Q$ C. $\frac{-5}{2} \in Q^-$ D. $-10 \in Z^-$

7. $|-10-(-5)| =$ _____

A. 5 B. -5 C. 15 D. -15

8. $2|x-5|+6=14$ then x = _____.

A. 9 B. 5 C. 13 D. 3

9. $3|2x+10|-2=26$ x = _____.

A. 9 B. -9 C. 0 D. none

10. Which one of the following is **true**?

A. $\left|\frac{2}{3}\right|+\left|\frac{-1}{3}\right|=1$ B. $\left|\frac{-7}{3}\right|<\frac{4}{3}$ C. $\left|\frac{2}{3}\right|>\left|\frac{-3}{4}\right|$ D. $\left|\frac{-5}{2}\right|<\frac{5}{2}$

11. The sum of two numbers is 30, where one of the numbers is five times the other. What are the two numbers?

A. 25 & 5 B. 4 & 20 C. 15 & 15 D. none

12. $3x - 7(2x - 13) = 3(-2x + 9)$, then x = _____.

A. $64/5$ B. $-64/5$ C. $\frac{-64}{22}$ D. $64/22$

13. Simplify $2x^2 + 5x - 4x^2 + x - x^2$

A. $-3x^2 + 6x$ B. $3x^2 - 6x$ C. $-3x^2 - 6x$ D. none

14. $3x^2 + 6y^2$ = _____ if x = 0 & y = 2

A. 12 B. 24 C. 0 D. none

15. $\frac{\frac{1}{4}\div\left(\frac{3}{2}-\frac{1}{2}\right)}{\left(\frac{7}{6}+\frac{1}{2}\right)}$ = _____

A. $\frac{1}{20}$ B. $\frac{-3}{20}$ C. $\frac{3}{20}$ D. none

16. $\frac{|2x|-|3x|}{|xy|}$ = _____ if x = -6 & y = 10

A. 1 B. $\frac{-3}{10}$ C. $\frac{3}{10}$ D. none

17. What is the numerical coefficient of $-x^2$?

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

18. $3(7 - 2x) = 14 - 8(x - 1)$ then x = _____?

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

19. $-3x > 5$ then the possible values of x are

A. $x \geq -5/3$ B. $x > -5/3$ C . $x \leq 5/3$ D. none

20. $2x + 10 < 10 : x \in N$

A. -2 B. 0 C. -1 D. { }

21. The ratio of two numbers is 2:3 & whose sum is 20, then what are two numbers?

A. 4 B. -4 C. $\frac{1}{4}$ D. $\frac{-1}{4}$

22. If a : b = 4 : 5, then $\frac{a-b}{b-a}$ = _____ .

A. -1 B. 1 C. -9 D. 9

23. The ratio of two numbers is 3:5 & their difference is 10, then what are the two numbers?

A. -15 & 35 B. 15 & -35 C. 15 & 35 D. 40 & 20

24. If 2a = 3c & 12c = 7b, then what is the ratio of a to b?

A. 8 :7 B. 7 : 8 C. 16 : 14 D. none

25. If we have 20 :18 = 30 : 60, then the difference of the means would be

A. 40 B. 12 C. 38 D. 90

26. Almaz has 50,000 in her account. If she plans to invest 20% of her saving in establishing a kindergarten. What is the amount required?

A. 10,000 B. 20,000 C. 30,000 D. 40,000

27. In a class where the number of girls are 30% of the total number, there are 35 boys. How many girls are there in the class?

A. 50 B. 15 C. 40 D. 25

28. If the selling price is equal with the cost price always there is _____.

A. Profit B. loss C. either profit or loss D. neither profit not loss

29. If the selling price is less than the cost price always there is

A. Loss B. profit C. neither of the two D. none

30. Which one of the following is **true**?

A. Loss = cost price + selling price C. Loss = selling price – cost price

B. Loss = selling price – cost price D. none

31. By selling goods for Birr 24,000 a merchant made a profit of 20%. How much did the goods cost him?

A. 200, 000 B. 20, 000 C. 4,000 D. 40,000

32. A trader bought a TV set for Birr 4,000 & sold it at a loss of 10%. What was the original price of the article?

A. 3,600 B. 360 C. 36 D. none

33. An article which cost Birr 200 was sold at a loss of 8%. What is the selling price?

A. 16 B. 184 C. 216 D. 284

34. 90% of 3000 is _____.

A. 2700 B. 270 C. 27,000 D. 27

35. 30% of a number is 12. So what is the number?

A. 270 B. 2,7000 C. 27 D. 27,000

36. Which principal would give birr 80 interests in 2 years at rate at 8%?

A. 500 B. 50 C. 5,000 D. none

37. Birr 500 interested at 10% per annum. How long would it take to the simple interest to amount to birr 900?

A. 5 B. 8 C. 7 D. none

38. If 5: a = a: 20, then the value of a is _____.

A. 10 B. $\frac{1}{10}$ C. 4 D. 2

39. What is the simple interest of birr 390 at 5% for a 4 months?

A. 6.5 B. 65 C. 75 D. 0.75

40. 3 - $\frac{x}{5} < 4$, x ϵ N what are the possible values of x?

A. x > -5 B. x < -5 C. { } D. none

1. When the expression $2\frac{2}{3} - 1\frac{2}{6} + \frac{3}{4}$ is simplified, it is equal to

A. 1 ¾ B. 3 ½ C. $2\frac{1}{12}$ D. 1 5/12

2. Which of the following statement is **false** about rational numbers?

A. There are many rational numbers between any two rational numbers.

B. On the number line, the rational number located to the left is smaller than the one to the right.

C. The absolute value of a negative rational number is itself.

D. Of two negative rational numbers, the one with greater absolute value is smaller.

3. Which one of the following operations **is not** practicable on the set of positive rational number?

A. Subtraction B. division C. addition D. multiplication

4. Which of the following set of rational numbers are written in increasing order?

A. $-6/5, -5/4, -4/3$ B. $\frac{4}{3}, 5/4, 6/5$ C. $5/6, \frac{4}{5}, 3/4$ D. $6/5, 5/4, 4/3$

5. When $\left(\frac{-24}{5} \times \frac{15}{16}\right) \div \left(6/4 \times -12/18\right)$ it is equal to

A. $9/2$ B. $5/2$ C. $7/8$ D. $8/3$

6. Which one of the following statement is **true** about the rational number a, b and c where c # o?

A. (a –b) + c = a (b + c) C. a – b = b - a

B. a (b + c) = (a + b) c D. (a + b) x c = (a x c) + (b x c)

7. Which of the following statements is **true**?

A. $\left|\frac{-8}{3}\right| < \frac{8}{3}$ B. $\left|\frac{5}{6}\right| + \left|\frac{-1}{6}\right| = 1$ C. $\left|-\frac{7}{3}\right| \leq \frac{4}{3}$ D. $\frac{2}{3} > \left|-\frac{3}{4}\right|$

8. Which one of the following equation **is not** equivalent to $4(2x-1) = 3(x+1)-2$?

A. $8x-3x = 5$ B. $5x = 5$ C. $3x-8x = 5$ D. $x = 1$

9. Which one of the following is the solution set of the equation $4(2x-1) = 3-(3x+2)$?

A. $\left\{\frac{5}{11}\right\}$ B. $\left\{\frac{5}{8}\right\}$ C. $\left\{\frac{5}{7}\right\}$ D. $\left\{-\frac{5}{11}\right\}$

10. Which one of the following is between $\frac{4}{5}$ and $\frac{5}{6}$?

A. $\frac{11}{6}$ B. $\frac{49}{60}$ C. $\frac{49}{30}$ D. $\frac{9}{5}$

11. If $y = x^2 + 2$ and $z = 2y^2 + 3$ then what is the value of z when x = 1?

A. 21 B. 5 C. 11 D. 23

12. If x is a positive rational number, what the solution set of the equation $3(5x+2) = 2(5x-2)$

A. {2} B.{-2} C. $\{-\frac{5}{2}\}$ D. Ø

13. What is the truth set of the inequality $3x \leq \frac{1}{2}(x+15)$ in the set of positive integer?

A. {1,2,3} B. {3,4,5} C. {0,1,2,3} D. {1,2,3,4}

14. The solution set of $2(7x-2) > 3(2+3x)$ $x \in Q$ is

A. {x:x > 2} B. {x:x < -2} C. {x:x > ½} D. {x:x < ½}

15. The sum of the ages of a girl and her brother is 32 years. If the girl is 6 years older than her brother. How old is her brother?

A. 19 B. 4 C. 15 D. 13

16. If $\sqrt{2x-5} = 7$ then what is the value of x?

A. 24 B. 20 C. 27 D. none

17. The simplification of $\sqrt{\frac{3}{8}}\sqrt{\frac{32}{108}}$ is

A. $\frac{1}{12}$ B. $\frac{1}{6}$ C. $\frac{1}{3}$ D. none

18. Which one of the following statement is **false**?

A. If x = 2.5 than $x^2 > 6$ C. If x = ¼ than $x^2 > \frac{1}{2}$

B. If x = 5 than $x^2 = 25$ D. If x = 0.6 than $x^2 = 0.36$

19. When $\sqrt{\frac{4}{6}} \times \sqrt{75} \times \sqrt{\frac{1}{8}}$ is equals to

A. $\frac{3}{4}$ B. $\frac{5}{2}$ C. ½ D. $\frac{2}{5}$

20. Which one of the following statements is **not true**?

A. If $a^2 = 2$ then $1.4 < a < 1.5$

B. If $\sqrt{a} = 1.3$ then $a = 1.69$

C. If $a = 20$ then $4 < \sqrt{a} < 5$

D. If $a = 1.5$ then $a^2 > 2.5$

21. $\sqrt[3]{0.027}$ is equals to

A. 0.3 B. 0.09 C. 0.03 D. 0.9

22. Which one of the following **is not true**?

A. $(3.2)^2 = 10.24$ B. $(1.5)^2 = 2.25$ C. $(2.1)^2 < 4.5$ D. $(0.25)^2 > 0.625$

23. If $x = 4$ and $y = 7$ than what is $(y-x)^3$?

A. 9 B. 8 C. 27 D. 64

24. Which one of the following is the exact factorization of $x^2 + 6x + 9$?

A. $(x+3)(x-3)$ B. $(x-3)^2$ C. $(3x+3)(x-3)$ D. $(x + 3)^2$

25. Which one of the following is the product of $(x+2)$ and $(2x-1)$?

A. $2x^2+x+2$ B. $2x^2+5x-2$ C. $2x^2+3x-2$ D. $2x^2+4x-2$

26. Which one of the following **is not true**?

A. $(2x-2)^2 = 4x^2-4$

B. $(x+4)^2 = x^2+8x+16$

C. $(3x-2)(3x+2) = 9x^2-4$

D. $(x-2)^2 = x^2-4x+4$

27. What is the HCF of $32x^2y^3$, $8x^2y^2$ and $64x^2y^4$?

A. $8xy^2$ B. $16x^2y^2$ C. $8x^2y^2$ D. none

28. The factor of $2x(x-2)+3(x-2)$

A. $(2x-3)(x-2)$ B. $(2x-2)(x-2)$ C. $(2x+3)(x-2)$ D. $(2x-3)(x-2)$

29. If $a = 4$ $b = 3$ and $c = -2$ than what is $(a^2-b^2)+2c$?

A. 10 B. 8 C. 3 D. none

30. If $d = \frac{1}{2} t(w + x)$ then what is w^l in other terms?

A. $\frac{2d}{tx}$ B. $\frac{2d}{t} + x$ C. $\frac{2d}{t} - x$ D. none

31. Simplified form of $x(xy+2y) - (3x^2+2x)y$ is

A. $2xy$ B. $-2x^2y$ C. $-2xy$ D. $2x^2$

32. Which one of the following is **false**?

A. $xy \times xy = x^2y^2$

B. $3x^2y^2-2x^2y^2 = x^2y^2$

C. $3x^2y^2+2x^2y^2 = 5x^2y^2$

D. $x^2y^2 - xy = xy$

33. The sum of three consecutive natural numbers is 36. What is the value of the largest natural number?

A. 11 B. 12 C. 15 D. 13

34. If $7(x-2)-2(x-3) = 3(x+2)$ the value of x is

A. 14 B. 11 C. 7 D. -5

35. The solution set of the equation. $(2x-2)(6x+3) = (3x-3)(4x-2)$

A. $\{1/2\}$ B. $\{3/5\}$ C. $\{2/3\}$ D. $\{1\}$

36. Which one of the following expression is different from the other?

A. $2x^2y+\frac{1}{3}yx^2$ B. $5x+6x-7x$ C. $5y^2x-2y^2x$ D. $3x^3y^3+6x^2-xy^3$

37. What is the numerical coefficient of $\frac{-x^2y}{6}$?

A. -6 B. -1 C. $-1/6$ D. none

38. What is the solution set of $\frac{x}{10}=\frac{2}{6}$

A. $\{5/3\}$ B. $\{10/3\}$ C. $\{1/6\}$ D. $\{1/4\}$

39. $\frac{2x-10}{2}+\frac{x+2}{4}=\frac{x+3}{3}$ the value of x is equal to

A. 5 B. $22/30$ C. 6 D. none

40. $\frac{x+2}{6}-\frac{x+3}{8}=\frac{5}{3}$ what is the value of x?

A. $\frac{41}{7}$ B. 6 C. 41 D. none

1. A piece of rope is 24cm long. The rope is cut in to two pieces in the ratio 2:1. What is the length of the shorter rope?

   A. 6cm B. 8cm C. 16cm D. none

2. If $a=2$ and $b=3$, then what is the value of $\frac{a+\frac{1}{b}}{a-\frac{a}{b}}$?

   A. $\frac{7}{4}$ B. $\frac{4}{7}$ C. $\frac{3}{7}$ D. none

3. What is the sum $5\frac{3}{4}+2\frac{11}{16}+7\frac{1}{8}$?

   A. $14\frac{8}{17}$ B. $14\frac{15}{16}$ C. $15\frac{1}{3}$ D. $15\frac{9}{16}$

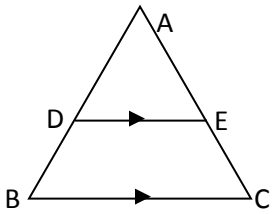
4. What is the slope of a line whose equation $5x-3y+1=0$?

   A. $3/5$ B. $-3/5$ C. $5/3$ D. $-5/3$

5. In the figure below, $\overline{DE} \parallel \overline{BC}$ and $\frac{AB}{AD}=\frac{1}{2}$. If the area of ΔABC is 38cm^2. What is the area of the ΔADE?

   A. $19/2\ cm^2$ C. $152cm^2$

   B. B. $156cm^2$ D. $162cm^2$



6. What is the simplified for $4x-3[(3x+1)-(3-x)]$?

   A. $6-8x$ B. $8x+6$ C. $8x-6$ D. none

7. Which of the following ordered pairs belong to the second quadrant?

   A. (-1, 1) B. (-1,-1) C. (1,-1) D. (1,1)

8. If 75% of a is equal to b, then which of the following is true?

   A. $a<b$ B. $a=b$ C. $a\le b$ D. $b>a$

9. What is the total surface are of a square pyramid if its height is 4cm and each side of the base is 6cm?

   A. 100 B. 86 C. 96 D. none

10. The perimeter of a rectangular field is 300m. If the length of the rectangle is 6m less than twice the width, what is the length of the field?

    A. 52 B. 58 C. 39 D. none

11. A square and an equilateral triangle have the same perimeter each side of the triangle is 4m. what is the area of the square?

    A. 9cm^2 B. 6cm^2 C. 16cm^2 D. none

12. The LCM of the numbers 108, 72 and 90 is

    A. $2\times3^2\times5$ B. $2^3\times3^2\times5$ C. $2^3\times3^3\times5$ D. $2^3\times3^3\times5$

13. The GCF of the numbers x and 30 is 10. If their LCM is 93, what is the value of x?

    A. 31 B. 36 C. 279 D. 24

14. Which one of the following equations has no solution in the set of whole numbers W?

    A. $3x+1=-2$ B. $\frac{x}{3}-2=1$ C. $2x+1=3x+1$ D. $2-\frac{1}{2}x=\frac{3}{2}x$

15. A piece of rope is 1meter and 20cm long; the rope is cut in to three pieces in the ratio 2:3:5, what is the length of the longest rope?

A. 24cm B. 36cm C. 60cm D. 90cm

16. If $f(x) = 3x^3 + x + 1$, then $f(-1)$ is

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

17. What is the sum of the interior angle of a regular octangle polygon?

A. 1080^0 B. 720^0 C. 540^0 D. 120^0

18. If ΔABC is similar to ΔDEF and $AB = 5cm,\ DE = 15cm$, area of ΔABC is $12cm^2$, then what is the area of ΔDEF ?

A. $160cm^2$ B. $90cm^2$ C. $108cm^2$ D. $120cm^2$

19. What is the solution set of the equation $\frac{2x-1}{3} + \frac{2x+1}{2} = 1$?

A. {-1} B. {1} C. $\left\{\frac{3}{2}\right\}$ D. $\left\{\frac{1}{2}\right\}$

20. If $1\frac{3}{4}\%$ of a certain number is 28, what is the number?

A. 1600 B. 1400 C. 1800 D. 3600

21. What is the equation of the line passing through the points (0, 1) and (2, 0)?

A. $2y - x + 2 = 0$ B. $2y + x - 2 = 0$ C. $2y + x + 2 = 0$ D. none

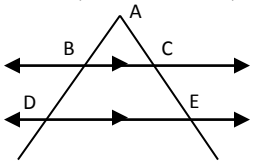
22. If $\sqrt{1-x} = 3$, what is the value of x?

A. -8 B. 8 C. 4 D. -4

23. In the figure $\overline{BC} \,//\, \overline{DE}$ and $\overline{AB}$ =3cm, $\overline{AD}$ =12cm, $\overline{CE}$ = 2cm, find the length of $\overline{AC}$.

A. 1 C. 2

B. 3 D. $\frac{1}{2}$



24. An observer 40m far from the bottom of a building observes the top of flag at an angle of elevation 45^0 how heigh is the top of the flag from the ground level? (use $\sin 45^0 = \frac{1}{\sqrt{2}}$ or $\cos 45^0 = \frac{1}{\sqrt{2}}$

A. $40\sqrt{3}$ m B. 40m C. 20m D. $\frac{40}{\sqrt{3}}m$

25. Which of the following is **true**?

A. The product of positive numbers and zero is positive number

B. The product of two negative numbers is positive

C. The sum of two negative numbers is positive

D. When we divide two negative numbers it is always negative.

26. Which of the following is true about the line equation $y = 1 - 2x$

A. The slope of the line is $-\frac{1}{2}$ C. The x intercept is $\frac{1}{2}$

B. The y intercept is -2 D. none

27. Which of the following is not true?

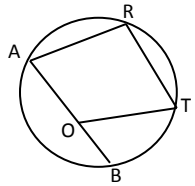
A. Inscribed angles subtended by the same arc are congruent

B. An angle inscribed in a semicircle is a straight angle

C. The measure of central angles is equal to the measure of an arc subtending it

D. In a cyclic quadrilateral the opposite angles are supplementary

28. In the figure given below, AB is ova meter of the circle 0, if $M(< ART) = 120^0$. What is $M(< BOT)$ in degrees?



A. 120^0 C. 60^0

B. 90^0 D. 30^0

29. Which one of the following is the solution set of the inequality $2(x+1)-(x-1) = 3(x+1)-1$?

A. 1R B. {} C. {0} D. none

30. The height of a rectangle is 4cm less than the base of the rectangle. If the perimeter of the rectangle is 20cm find the area of the rectangle?

A. $10cm^2$ B. $21cm^2$ C. $77cm^2$ D. none

31. The ratio of the age of a boy to the age of his father 2:3. If the sum of their ages is 125 years, how old is the boy?

A. 50 B. 75 C. 80 D. none

32. If $x = -1$ and $y = 2$, then $\frac{2xy - xy}{|x| + |y|}$ is equal to

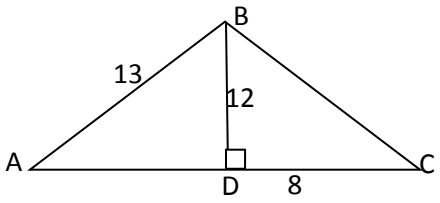
A. $-2/3$ B. $2/3$ C. $\frac{-3}{2}$ D. $\frac{3}{2}$

33. If $x = 2$ and $y = -1$, then $\dfrac{x^2 + y^2}{x + y}$ is

A. 5 B. 1 C. 3 C. $\dfrac{5}{3}$

34. What is the solution set of the inequality $3(2x - 1) \geq x + 1$ in the set of positive integers?

A. $\{0,1,2,---\}$ B. $\{1,2,3,---\}$ C. $\{2,3,4,---\}$ D. none



35. $\overline{AD}$ = _____

A. 25 B. 10 C. 5 D. none

36. $\overline{BC}$ = _____

A. 106 B. 104 C. 114 D. none

37. $\overline{AC}$ = _____

A. 40 B. 5 C. 13 D. 14

38. If $\sin 30^0 = \dfrac{1}{2}$ and $\cos 30^0 = \dfrac{\sqrt{3}}{2}$, then $\tan 30^0$ is _____

A. $\sqrt{3}$ B. $\dfrac{1}{\sqrt{3}}$ C. $\dfrac{1}{2}$ D. 2

39. $\left|\dfrac{1}{3}x\right| = 6$, the x = _____

A. $\{-18\}$ B. $\{18\}$ C. $\{-18,18\}$ D. $\{\ \}$

40. The lateral surface area of a right circular cylinder is 240cm^2 and the circumference of the bases is 12cm , find the altitude of the cylinder

A. 48cm B. 2cm C. 20cm D. none