1. Solve the equation: $2^{(9x-3)} = 8^{(3-x)}$.

A. x = 3
B. x = 2
C. x = 1
D. x = 0

2. Multiply 6.4×10^8 by 3.1×10^{-5} and leave the answer in standard form.

A. 1.984×10^5
B. 1.984×10^4
C. 1.984×10^3
D. 1.984×10^2

3. Simplify: 6 3/4 ÷ (2 1/3 × 2 1/4 – 21).

A. 6 3/4
B. 4
C. 1/4
D. 1/27

4. Express as a ratio: the speed of 1 km/min to the speed of 10 m/s.

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

5. If y varies directly as (2x + 3) and x = 5 when y = 52, what is the value of x when y = 36?

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

6. If $4m4_{five} = 119$, what is the value of m?

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

7. Simplify: (3/4)√128 – √32 – (1/5)√50.

A. 2√2
B. √2
C. –√2
D. –2√2

8. An agent receives x% commission on every sale on product P and y% commission on every sale on product Q. If his total sales for a particular day were $2000 and $7000 for products P and Q respectively, what was the total commission of the agent?

A. $(70x + 40y)
B. $(20x + 5y)
C. $(20x + 70y)
D. $(70x + 20y)

9. Solve the simultaneous equations: u/2 – v = 1; 2u/3 – v = 2.

A. u = 6, v = 2
B. u = 2, v = 6
C. u = –2, v = 6
D. u = –6, v = 2

10. If (x + 1)/2 – (2x – 1)/3 < 2, solve for x.

A. x < –7
B. x < –17
C. x > –17
D. x > –7

11. Find the smaller value of x which satisfies the equation: x(x + 6/(x – 1)) = 12.

A. 3
B. 2
C. –2
D. –3

12. If R = h/2 + d²/(8h), express d in terms of R and h.

A. √[4h(2R – h)]

B. $\sqrt{[4h(R - h)]}$
C. $\sqrt{[4h(h - R)]}$
D. $\sqrt{[4h(h - 2R)]}$

13. The sum of two numbers is 15. One of the numbers is 1 1/2 times the other. Find the bigger number.

A. 6
B. 9
C. 10
D. 12

14. If $x^2 + 1 - (x - 2)(x + 1) = 0$, find the value of x.

A. 3
B. 1
C. –1
D. –3

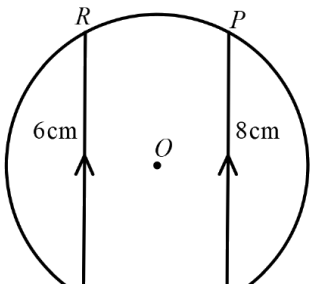
15. The radius, r, of a cone is twice its height h (in metres). Express the volume of the cone in terms of h.

A. $(4/3)\pi h^3$ m³
B. $(5/3)\pi h^2$ m³
C. $(1/12)\pi h^3$ m³
D. $(2/3)\pi h^2$ m³

16. In the diagram, PQ and RS are parallel chords of a circle of radius 5 cm. If |PQ| = 8 cm and |RS| = 6 cm, how far apart are the chords?

twice its height h (in metres). F

$\frac{5}{3}\pi h^2 m^3$ C. $\frac{1}{12}\pi h^3 r$



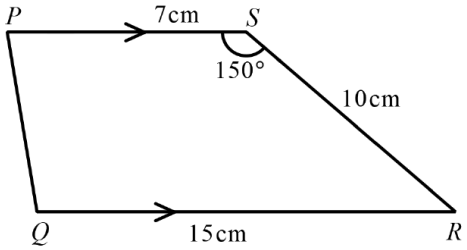
A. 3 cm
B. 4 cm
C. 7 cm
D. 9 cm

17. If a pyramid has a square base and its vertical height is 8 cm. If the diagonal of its base is $12\sqrt{2}$ cm, calculate its volume.

A. 364 cm³
B. 374 cm³
C. 384 cm³
D. 398 cm³

18. In the diagram, PQRS is a trapezium with |PS| = 7 cm, |QR| = 15 cm and |SR| = 10 cm. If ∠PSR = 150° and PS parallel to QR, calculate the area of the trapezium.

B. 374cm^3 C. 384cm^3



PS is a trapezium with |PS| 7cm |QR|

A. 35 cm²
B. 55 cm²
C. 56 cm²
D. 70 cm²

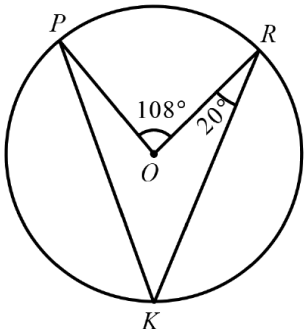
19. The interior angles of a hexagon are 2r, 3r, 2r, 5r, r and 2r. Find the value of r.

A. 96°
B. 80°
C. 48°
D. 36°

20. In the diagram, O is the centre of the circle, ∠POR = 108° and ∠ORK = 20°, calculate ∠OPK.

xagon are $2r, 3r\ 2r, 5r, r$ and $2r$. Fi

80° C. 48°

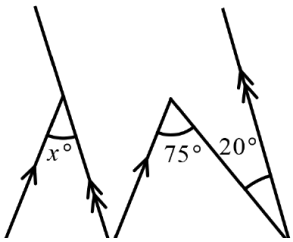


A. 27°
B. 34°
C. 36°
D. 42°

21. Find the value of x in the diagram.

ntre of the circle, $\angle POR = 108^\circ$ and $\angle($

34° C. 36°



A. 95°
B. 75°
C. 55°
D. 20°

22. Edem drew a straight line XY on a plain sheet of paper. Using a pair of compasses with centre X and a convenient radius, he drew an arc intersecting XY at P. Using the same radius and P as the centre, he drew another arc to intersect the first arc at T. He joined T to X and read off ∠TXP with protractor. What value did he read?

A. 90°
B. 75°
C. 60°
D. 45°

23. A bird on top of a tree 15 m high was observed at an angle of elevation of 75° from the same horizontal ground as the foot of the tree. Calculate, correct to the nearest whole number, the distance of the observer from the foot of the tree.

A. 4 m
B. 6 m
C. 7 m
D. 56 m

24. If tan x = 1/√3, where 0° ≤ x ≤ 90°, find (sin x – cos x).

A. (1 – √3)/2
B. 2/(1 – √3)
C. (√3 – 1)/2
D. 2/(√3 – 1)

25. If the bearing of R from Q is 135°, find the bearing of Q from R.

A. 045°
B. 255°
C. 270°
D. 315°

The table shows the distribution of marks scored by some students in a test. Use it to answer Questions 26 and 27.

Mark	2	3	4	5	6
Frequency	2	4	5	3	1

26. What is the median mark?

A. 3.0
B. 3.5
C. 4.0
D. 4.5

27. If two students are selected at random without replacement, what is the probability that they scored above the mode?

A. 2/225
B. 1/35
C. 2/35
D. 16/225

28. A box contains 20 identical balls. 8 of them are red, 7 white and the rest black. If two balls are chosen at random from the box without replacement, find the probability that they are both red or both white or both black.

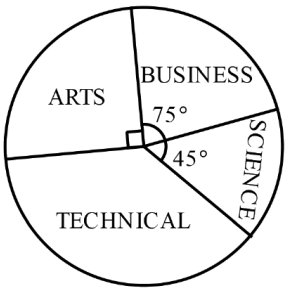
A. 59/200
B. 77/200
C. 59/190
D. 77/190

29. Express $2 - 3 \log_{10} 2$ as the logarithm of a single number.

A. $\log_{10}(25/12)$
B. $\log_{10}(25/8)$
C. $\log_{10}(25/4)$
D. $\log_{10}(25/2)$

The pie chart shows the distribution of 600 mathematics textbooks for Science, Arts, Business and Technical classes. Use it to answer Questions 30 and 31.

ɔution of 600 mathematics textbooks fo
*ver Question **30** and **31**.*



for the technical class?

150 C. 200

30. How many textbooks are for the technical class?

A. 100
B. 150
C. 200
D. 250

31. What percentage of the total number of textbooks belong to science class?

A. 12 1/2 %
B. 20 5/6 %
C. 25%
D. 41 2/3 %

32. A trader took a loan of GHC 5,500.00 from a bank and paid back GHC 6,000.00 after 10 months. At what rate, correct to the nearest percentage, was the simple interest charged?

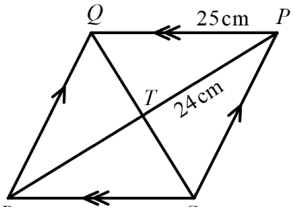
A. 10%
B. 11%
C. 8%
D. 7%

The diagram shows a rhombus PQRS with diagonals PR and SQ, |PT| = 24 cm and |PQ| = 25 cm. Use this information to answer Questions 33 and 34.

to the nearest percentage, was the simple interest

B. 11% C. 8%

ɔmbus $PQRS$ with diagonals PR and SQ, $|PT| = 2$
*ɜwer Questions **33** and **34**.*



33. What is the value of ∠PTQ?

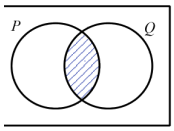
A. 45°
B. 60°
C. 75°
D. 90°

34. Calculate |ST|.

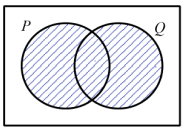
A. 35 cm
B. 28 cm
C. 22 cm
D. 7 cm

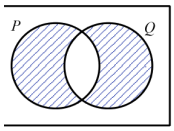
35. Which of the shaded regions in the Venn diagram illustrates the set P′ ∪ Q′?

ch of the shaded regions in the Venn diagram illustrates the set P′ ∪ Q′?

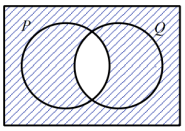


B.





D.



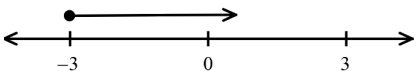
ulate the product of the third and fourth terms of the sequence $T_n = 2\left(2 + 3^{(n-1)}\right)$

A. B. C. D.

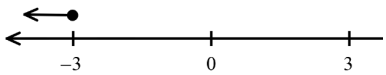
36. Calculate the product of the third and fourth terms of the sequence $T_n = 2(2 + 3^{(n-1)})$.

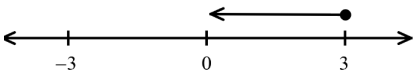
A. 1616
B. 1352
C. 1276
D. 1160

37. Which of the following illustrates the solution of the inequality x/3 – (x – 3)/2 ≤ 1 on a number line?

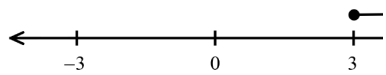


B.





D.



plify: $\frac{1}{x+1} - \frac{2}{x-1} + \frac{3}{x^2-1}$.

A. B. C. D.

38. Simplify: 1/(x + 1) – 2/(x – 1) + 3/(x² – 1).

A. –x/(x² – 1)
B. –3x/(x² – 1)
C. x/(x² – 1)
D. (x + 1)/(x² – 1)

39. Given that x = 1/5 and y = 2, evaluate $(2xy)^{-1}$ + 4/(y – 1).

A. 5/7
B. 1/8
C. 9/4
D. 29

40. If the perimeter of a square is equal to the area of an equilateral triangle of side 3.2 cm, find, correct to 2 decimal places, the area of the square.

A. 1.23 cm²
B. 1.92 cm²
C. 7.68 cm²
D. 15.36 cm²

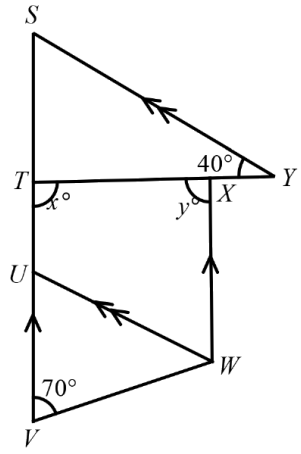
41. Factorize completely: m²n – 2mn² + n³.

A. n(m – n)²
B. m(m + n)²
C. n(m – n)(m + n)
D. n(m – n)(n – m)

42. Simplify: 3/(x + 3) – 2(x – 3)/(x² – 9).

A. 2/(x + 3)
B. 2/(x – 3)
C. 1/(x + 3)
D. 1/(x – 3)

In the diagram, SY parallel to UW, SV parallel to XW, ∠SYT = 40° and ∠UVW = 70°. Use the diagram to answer Questions 43 and 44.



$\| \overline{XW}\ \angle SYT = 40^\circ$ and $\angle UVW = 7($

43. Find the value of x.

A. 110°
B. 95°
C. 90°
D. 85°

44. Find the value of y.

A. 70°
B. 85°
C. 90°
D. 95°

45. If (–2, 4) is a point on the graph of $y = px^2 – 2x + 4$, where p is a constant, find the value of p.

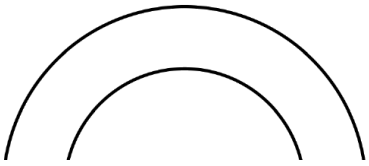
A. 2
B. 1
C. –1
D. –2

46. The figure is made up of two semi-circles whose diameters are 14 cm and 7 cm. If |PQ| = |RS| = 3½ cm, find the perimeter of the figure. [Take π = 22/7]

B. 85° C. 90°

n the graph of $y = px^2 - 2x + 4$, where p is a con

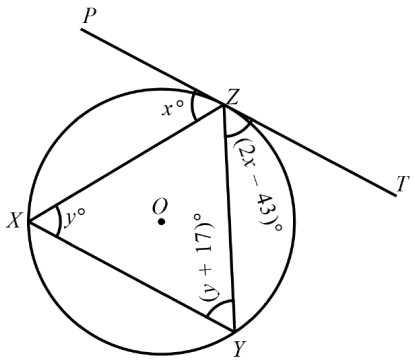
B. 1 C. -1



A. 73 cm
B. 66 cm
C. 44 cm
D. 40 cm

47. In the diagram, ∠ZXY = y°, ∠ZYX = (y + 17)°, ∠PZX = x° and ∠YZT = (2x – 43)°. Find the value of y.

B. 66cm C. 44cm

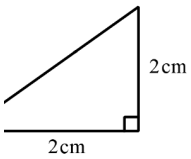


$\angle ZYX = y°$, $\angle ZYX = (y + 17)°$, $\angle PZX = x°$ and $\angle Y$

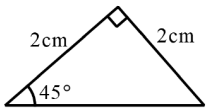
A. 40°
B. 36°
C. 20°
D. 9°

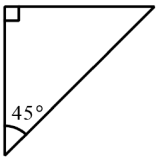
48. Which of these triangles are congruent to each other?

these triangles are congruent to each other?



II.





ıd III B. I and II only C. II and III only D.

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

49. Two adjacent angles on a straight line are (x – 60)° and (y + 30)°. Find the value of (x + y).

A. 210°
B. 150°
C. 90°
D. 30°

50. Given that {x : 4.5 < x ≤ 12}, where x is an even integer. List the values of x.

A. {6, 8, 10, 12}
B. {4, 6, 8, 10}
C. {6, 8, 12}
D. {4, 10, 12}