1. A car traveled 281 miles in 4 hours 41 minutes. What was the average speed of the car in miles per hour?

(a) 60 miles/hr

(c) 80 miles/hr

(b) 70 miles/hr

(d) 90 miles/hr

2. In a group of 120 people, 90 have an age of more 30 years, and the others have an age of less than 20 years. If a person is selected at random from this group, what is the probability the person's age is less than 20?

(a) 0.15

(c) 0.35

(b) 0.25

(d) 0.45

3. The length of a rectangle is four times its width. If the area is 100 m^2 what is the length of the rectangle?

(a) 30 meters

(c) 10 meters

(b) 40 meters

(d) 20 meters

4. A six-sided die is rolled once. What is the probability that the number rolled is an even number greater than 2?

(a) 5/7

(b) 8/7

(c) 1/3

(d) 2/3

5. Point A has the coordinates (2,2). What are the coordinates of its image point if it is translated 2 units up and 5 units to the left, and reflected in the x axis?

(a) (3, 4)

(b) (-3, -4)

(c) (-6, 3)

(d) (6, 3)

6. The length of a rectangle is increased to 2 times its original size and its width is increased to 3 times its original size. If the area of the new rectangle is equal to 1800 square meters, what is the area of the original rectangle?

(a) 300 m^2

(b) 400 m^2

(c) 500 m^2

(d) 600 m^2

7. Each dimension of a cube has been increased to twice its original size. If the new cube has a volume of 64,000 cubic centimeters, what is the area of one face of the original cube?

(a) 300 cm^2

(c) 500 cm^2

(b) 400 cm^2

(d) 600 cm^2

8. Pump A can fill a tank of water in 5 hours. Pump B can fill the same tank in 8 hours. How long does it take the two pumps working together to fill the tank?

(a) 4 hrs 6 min

(c) 3 hrs 5 min

(b) 5 hrs 3 min

(d) 6 hrs 4 min

9. A water tank, having the shape of a rectangular prism of base 100 square centimeters, is being filled at the rate of 1 liter per minute. Find the rate at which the height of the water in the water tank increases. Express your answer in centimeters per minute.

(a) 5 *cm/min*

(c) 15 *cm/min*

(b) *10 cm/min*

(d) 20 *cm/min*

10. Dany bought a total of 20 game cards some of which cost $0.25 each and some of which cost $0.15 each. If Dany spent $4.2 to buy these cards, how many cards of each type did he buy?

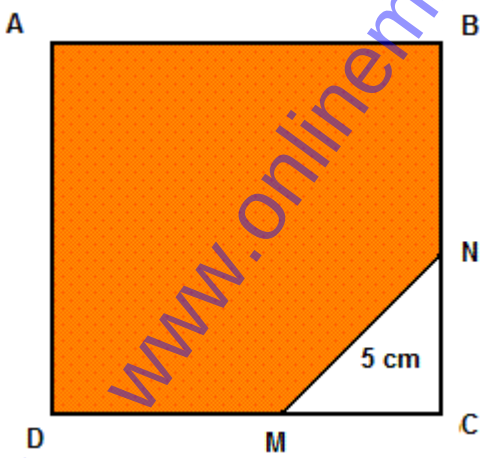
(a) 12 cards at $0.25 and 8 cards at $0.15

(b) 11 cards at $0.25 and 7 cards at $0.15

(c) 10 cards at $0.25 and 6 cards at $0.15

(d) 9 cards at $0.25 and 5 cards at $0.15

11. The size of the perimeter of the square ABCD is equal to 100 cm. The length of the segment MN is equal to 5 cm and the triangle MNC is isosceles. Find the area of the pentagon ABNMC



(a) 718.75 cm^2

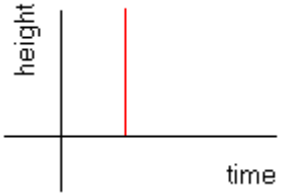
(b) 618.75 cm^2

(c) 418.75 cm^2

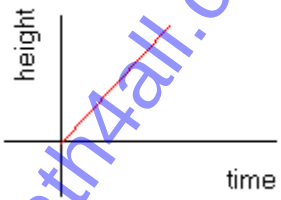
(d) 518.75 cm^2

12. Water is being pumped, at a constant rate, into an underground storage tank that has the shape of a rectangular prism. Which of the graphs below best represent the changes in the height of water in the tank as a function of the time?

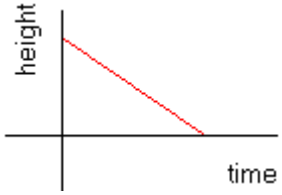
(a)



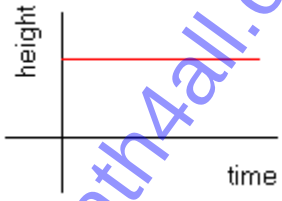
(b)



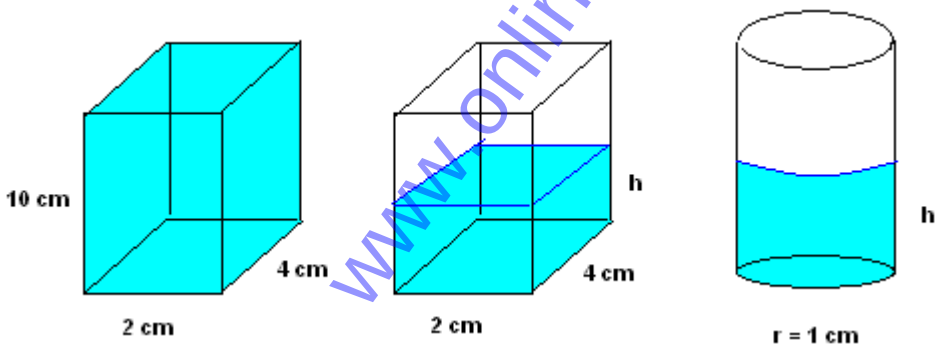
(c)



(d)



13. Initially the rectangular prism on the left was full of water. Then water was poured in the right cylindrical container so that the heights of water in both containers are equal. Find the height h of water in both containers.



(a) 6.4 cm

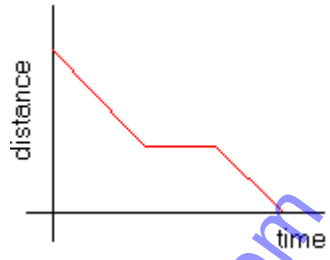
(b) 2.4 cm

(c) 7.2 cm

(d) 4.9 cm

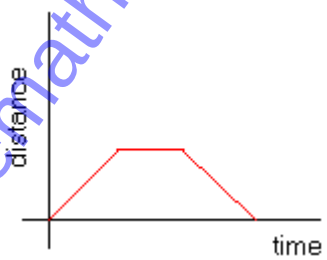
14. Peter drove at a constant speed for 2 hours. He then stopped for an hour to do some shopping and have a rest and then drove back home driving at a constant speed. Which graph best represents the changes in the distance from home as Peter was driving?

(a)



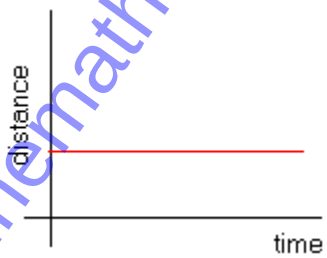
(c) 30.79%

(b)



(c)

(d)



15. Two balls A and B rotate along a circular track. Ball A makes 2 full rotations in 26 minutes. Ball B makes 5 full rotation in 35 minutes. If they start rotating now from the same point, when will they be at the same starting point again?

(a) After 1 hour 31 minutes

(b) After 1 hour 34 minutes

(c) After 1 hour 37 minutes

(d) After 1 hour 40 minutes

16. In a certain college, 40% of the senior class students is taking Physics, 30% is taking calculus and 10% is taking both. If 40 students are enrolled in the senior class, how many students are taking neither Physics nor calculus?

(a) 15 students

(b) 16 students

(c) 17 students

(d) 18 students

17. Joe drove at the speed of 45 miles per hour for a certain distance. He then drove at the speed of 55 miles per hour for the same distance. What is the average speed for the whole trip?

(a) 79.5 miles per hour

(b) 69.5 miles per hour

(c) 59.5 miles per hour

(d) 49.5 miles per hour

18. If the radius of a cylindrical container is doubled, how do you change the height of the container so that the volume will stay the same?

(a) 1/3 of the original height

(b) 1/4 of the original height

(c) 1/5 of the original height

(d) 1/7 of the original height

19. One leg of a right triangle is 18 cm and its area is 108 square cm. Find its perimeter.

(a) 31.6 cm

(b) 41.6 cm

(c) 51.6 cm

(d) 61.6 cm

20. What is the sum of the sizes of the interior angles of a polygon with 53 sides?

(a) 9190 degrees

(b) 9170 degrees

(c) 9180 degrees

(d) 9160 degrees

21. Jack is taller than Sarah but shorter than both Malika and Tania. Malika is shorter than Tania. Natasha is shorter than Sarah. Who is the shortest?

(a) Natasha

(b) Malika

(c) Jack

(d) Tania

22. What is the height (one of the legs) and the hypotenuse of an isosceles right triangle that has an area of 800 square feet?

(a) 10 ft, $40\sqrt{2}$ ft

(b) 20 ft, $40\sqrt{2}$ ft

(c) 30 ft, $40\sqrt{2}$ ft

(d) 40ft, $40\sqrt{2}$ ft

23. Find the circumference of a circle inscribed inside a square with a side of 20 meters.

(a) 40π m

(b) 30π m

(c) 20π m

(d) 10π m

24. Two different schools (A and B) have the same number of pupils. The ratio of the boys in school A and the boys in school B is 2:1 and the ratio of the girls in school A and the girls in school B is 4:5. Find the ratio of the boys in school A to the girls in school A.

(a) 2:1

(b) 1:2

(c) 5:3

(d) 3:5

25. A water tank has the shape of a rectangular prism of base 50 cm^2. This tank is being filled at the rate of 12 liters per minutes. Find the rate at which the height of the water in the water tank increases; express your answer in millimeters per second.

(a) 70 mm/sec

(b) 60 mm/sec

(c) 50 mm/sec

(d) 40 mm/sec

26. One pump fills a tank two times as fast as another pump. If the pumps work together they fill the tank in 18 minutes. How long does it take each pump working alone to fill the tank?

(a) Faster Pump: 27 minutes, Slower Pump: 54 minutes

(b) Faster Pump: 37 minutes, Slower Pump: 64 minutes

(c) Faster Pump: 47 minutes, Slower Pump: 74 minutes

(d) Faster Pump: 57 minutes, Slower Pump: 84 minutes

27. Find the value of $|4x - 2y|$, for $x = -2$ and $y = 3$

(a) 2

(b) *-2*

(c) *14*

(d) *-14*

28. Which two angles are complementary?

(a) 21 degrees and 78 degrees

(b) 58 degrees and 22 degrees

(c) 67 degrees and 23 degrees

(d) 140 degrees and 40 degrees

29. Which two angles are **not** supplementary?

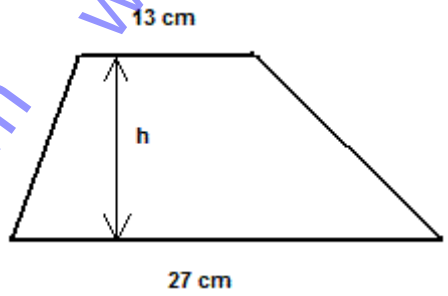
(a) 30° and 150°

(b) 5° and 175°

(c) 89° and 91°

(d) 23° and 177°

30. Find the height h of the trapezoid so that its area is equal to 400 square cm.



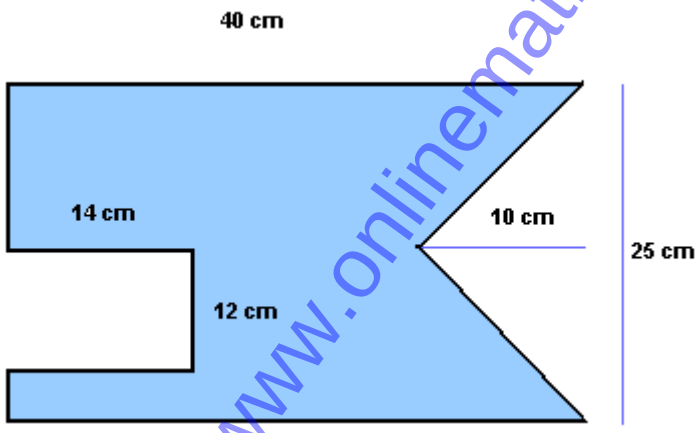
(a) 10 cm

(b) 20 cm

(c) 30 cm

(d) 40 cm

31. Find area of the shaded shape.



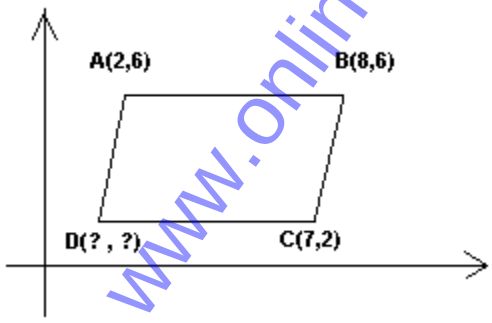
(a) 570 cm^2

(c) 770 cm^2

(b) 670 cm^2

(d) 870 cm^2

32. If the quadrilateral ABCD is a parallelogram, what are the coordinates of point D?



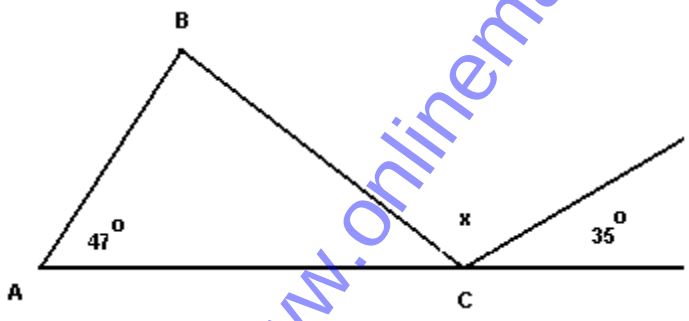
(a) (3,2)

(c) (2,1)

(b) (2,3)

(d) (1,2)

33. Find x if triangle ABC is a right triangle.



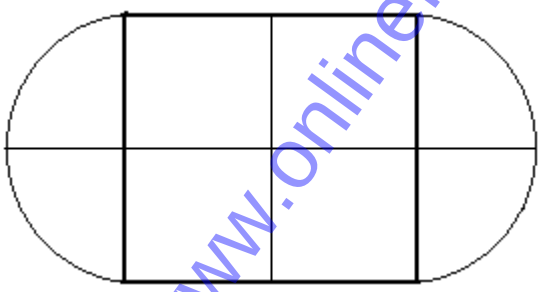
(a) 112°

(c) 102°

(b) 122°

(d) 132°

34. Mrs Parkinson's garden is made up of 4 squares and 2 semicircles as shown below. Each small square has an area of 4 square meters. Find the total area of the garden.



(a) 3∏ +16 square units

(c) 5∏ +16 square units

(b) 4∏ +16 square units

(d) 6∏ +16 square units

35. A water sprinkler can spray water at a maximum distance of 12 m in all directions. What area of the garden can this sprinkler irrigate?

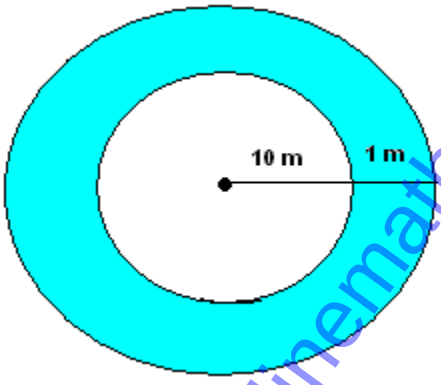
(a) 452 sq. meters

(b) 453 sq. meters

(c) 454 sq. meters

(d) 455 sq. meters

36. A circular garden with a diameter of 10 meters is surrounded by a walkway of width 1 meter. Find the area of the walkway (shaded part).



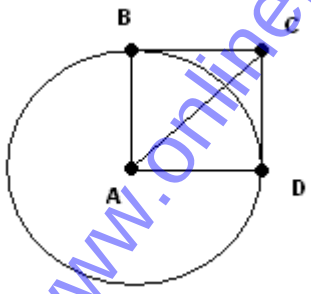
(a) 18π m^2

(b) 19π m^2

(c) 20π m^2

(d) 21π m^2

37. ABCD is a square with one vertex at the center of the circle and two vertices on the circle. What is the length of AC if the area of the circle is 100 square cm?



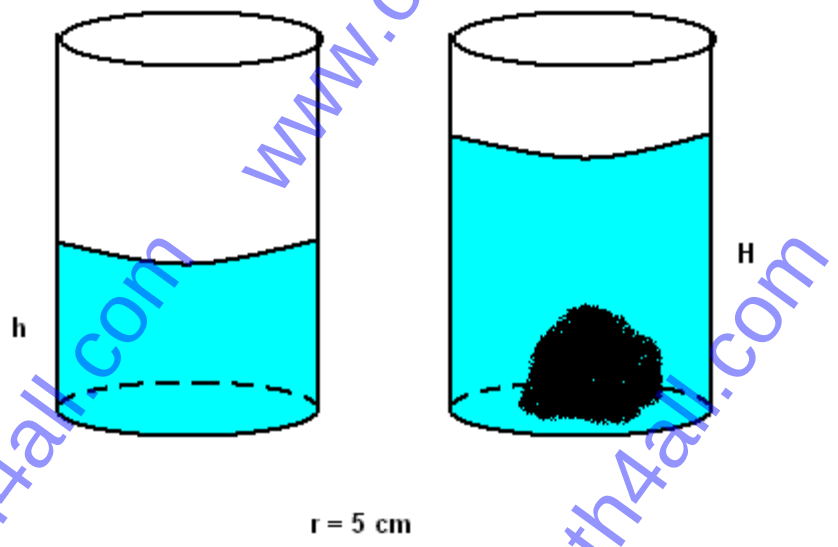
(a) 8 square root (2/Π)

(b) 9 square root (2/Π)

(c) 10 square roots (2/Π)

(d) 11 square root (2/Π)

38. The height **h** of water in a cylindrical container with radius r = 5 cm is equal to 10 cm. Peter needs to measure the volume of a stone with a complicated shape and so he puts the stone inside the container with water. The height of the water inside the container rises to 13.2 cm. What is the volume of the stone in cubic cm?



(a) 70Π cm^3

(b) 80Π cm^3

(c) 40Π cm^3

(d) 50Π cm^3

39. The numbers 2, 3, 5 and x have an average equal to 4. What is x?

(a) 6

(b) 5

(c) 4

(d) 3

40. Find x , y , z so that the numbers 41 , 46 , x , y , z have a mean of 50 and a mode of 45.

(a) x=45, y=35, z=73

(b) x=45, y=45, z=73

(c) x=45, y=45, z=37

(d) x=35, y=45, z=37

41. A is a constant. Find A such that the equation $2x + 1 = 2A + 3(x + A)$ has a solution at $x = 2$.

(a) -4/5

(b) -2/5

(c) -9/5

(d) -1/5

42. 1 liter is equal to 1 cubic decimeter and 1 liter of water weighs 1 kilogram. What is the weight of water contained in a cylindrical container with radius equal to 50 centimeters and height equal to 1 meter?

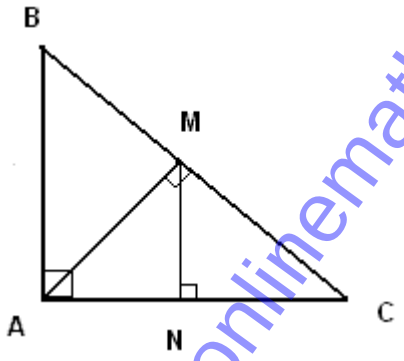
(a) 200Π kg

(b) 225Π kg

(c) 250Π kg

(d) 275Π kg

43. In the figure below triangle ABC is an isosceles right triangle. AM is perpendicular to BC and MN is perpendicular to AC. Find the ratio of the area of triangle MNC to the area of triangle ABC.



(a) 2:5

(b) 2:7

(c) 1:4

(d) 1:5

44. What are the dimensions of the square that has the perimeter and the area equal in value?

(a) *4 units*

(c) 8 units

(b) 6 units

(d) 10 units

45. At the start of the month a shop had 20-inches and 40-inches television sets in the ratio 4:5. By the end of the month, 200 20-inches and 500 40-inches were sold and the ratio of 20-inches to 40-inches television sets became 1:1. How many television sets of each type were there at the start of the month?

(a) 1500 at 20 inches & 1200 at 40 inches

(b) 1200 at 20 inches & 1500 at 40 inches

(c) 1600 at 20 inches & 1800 at 40 inches

(d) 1800 at 20 inches & 1600 at 40 inches

46. The aspect ratio of a TV screen is the ratio of the measure of the horizontal length to the measure of the vertical length. Find the horizontal length and vertical height of a TV screen with an aspect ratio of 4:3 and a diagonal of 50 inches.

(a) Horizontal length = 70 inches, Vertical height = 50 inches

(b) Horizontal length = 50 inches, Vertical height = 70 inches

(c) Horizontal length = 30 inches, Vertical height = 40 inches

(d) Horizontal length = 40 inches, Vertical height = 30 inches

47. Simplify $(-a^2b^3)^2(c^2)^0$

(a) $-a^4b^5$

(b) $-a^4b^6$

(c) a^4b^6

(d) a^4b^5

48. If $(x^2 - y^2) = 10$ and $(x + y) = 2$, find x and y.

(a) x=3.5, y=1.5

(b) x=3.5, y=-1.5

(c) x=-3.5, y=-1.5

(d) x=3.5, y=1.5

49. Solve the equation $2|3x - 2| - 3 = 7$.

(a) {7/3, -1}

(c) {3/7, -1}

(b) {7/3, 1}

(d) {3/7, 1}

50. For what value of **k** is the point (-2, k) on the line with equation $-3x + 3y = 4$?

(a) -5/4

(c) -3/2

(b) -4/5

(d) -2/3

Answers:

1. a	2. b	3. d	4. c	5. b	6. a
7. b	8. c	9. b	10. a	11. b	12. b
13. c	14. b	15. a	16. b	17. d	18. b
19. c	20. c	21. a	22. d	23. c	24. b
25. d	26. a	27. c	28. c	29. d	30. b
31. a	32. d	33. c	34. b	35. a	36. d
37. c	38. b	39. a	40. b	41. d	42. c
43. c	44. a	45. b	46. d	47. c	48. b
49. a	50. d				