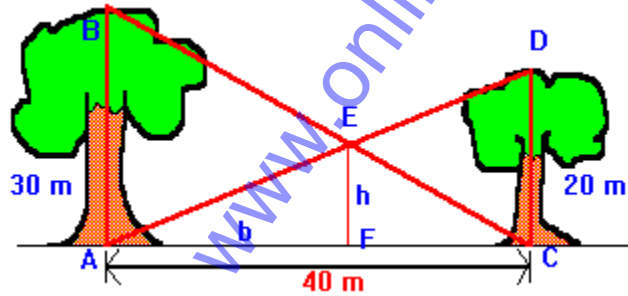1. Two trees of height 20m and 30m have ropes running from the top of each tree to the bottom of the other tree. How high above the ground do the ropes intersect?
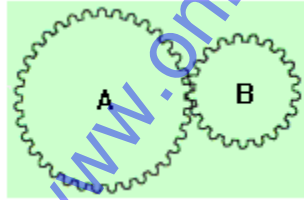
The trees are 40m apart.


(a) 12 m

(b) 14 m

(c) 10 m

(d) 18 m

2. Two gear wheels A and B are in contact. One wheel (A) has 36 teeth. The other (B) has 24 teeth. How many times must the smaller wheel turn before the larger wheel completes a revolution?

(a) Wheel A must turn 1 ½ times for every revolution of B

(b) Wheel B must turn 3 ½ times for every revolution of A

(c) Wheel A must turn 1 ½ times for every revolution of B

(d) Wheel B must turn 1 ½ times for every revolution of A

3.
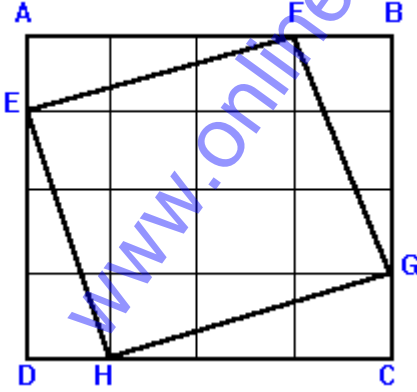
Find the area of quadrilateral EFGH.
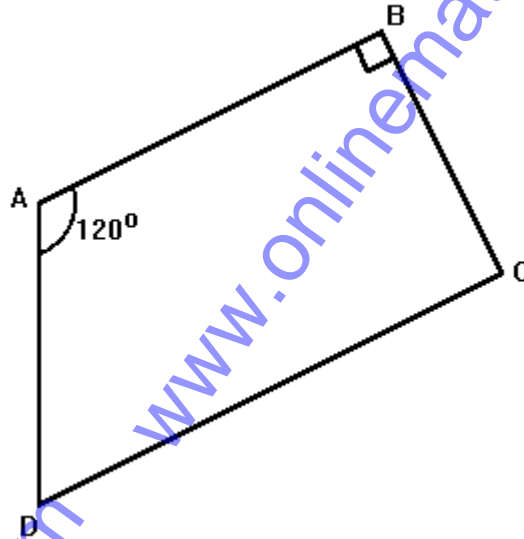
Given $(HC)^2 + (CG)^2 = (HG)^2$

(a) 15

(c) 12

(b) 10

(d) 16

4.

In the quadrilateral ABCD, angle A is 120 degrees, angle D is two thirds of angle C, and angle B is 90 degrees. Find angle C.

(a) 60^0 (c) 90^0
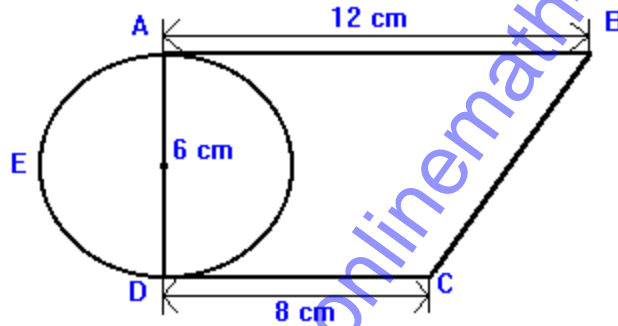
(b) 45^0 (d) 100^0

5.

Line AB is parallel to line CD

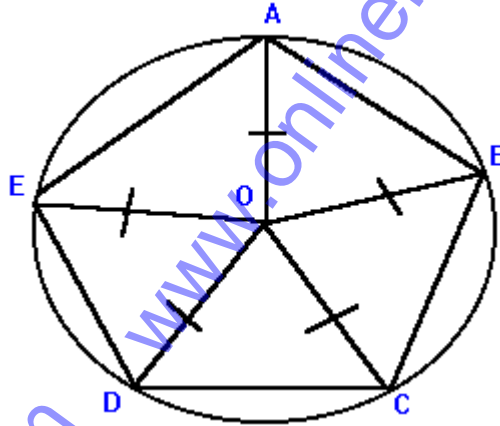The semicircle AED has diameter AD of 6cm. What is the area of the trapezoid ABCD plus the semicircle AED?

(a) 74.137 cm²

(c) 74.237 cm²

(b) 64.137 cm²

(d) 70.137 cm²

6. Regular pentagon ABCDE is enclosed in a circle. If the radius of the circle is 5 and each side AB = BC = CD = DE = EA = 5.88, find the area of the pentagon.

(a) 50.14

(c) 53.26

(b) 59.54

(d) 56.23

7.
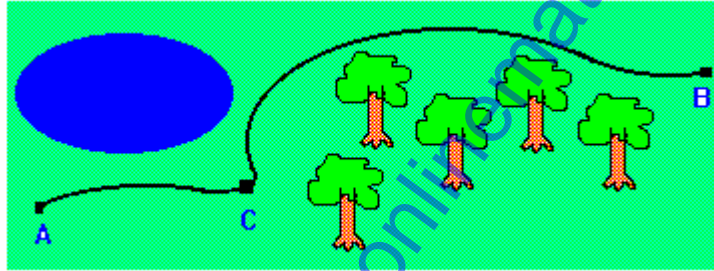
Points A and B on a map are 12km apart if you follow the path. A troop of boy scouts leaves point A at 11:00 a.m.. They are all carrying packs and travel 3km/hr until they reach point C at 12:45. If they want to reach point B by 2:00, how fast will they have to go?

(a) 5.1 km/hr

(c) 5.4 km/hr

(b) 5.5 km/hr

(d) 5.3 km/hr

8. Shawn bought a car for $5600.00. He sold it to Rachel for 5/6 the price he paid for it. Rachel sold it to Raelene for 1/5 less than she paid. Raelene sold it to Rick for 3/4 what she paid.

What did Rick pay for the car?

(a) $4300

(c) $5500

(b) $2600

(d) $2800

9. Square ABCD has the centers of 4 equal circles as its vertices. Find the shaded area.
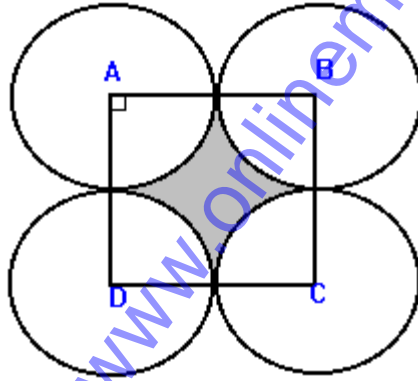
(a) $(8-\prod) r^2$

(c) $(4+\prod) r^2$

(b) $(4-\prod) r^2$

(d) $(6-\prod) r^2$

10. Water conservation can be a big problem in some parts of the world. If a community's water pump drips 3 drops every second and each drop is 1 1/3ml, how much water will be wasted in one year?

(a) 156144 liters

(c) 126144 liters

(b) 16144 liters

(d) 132144 liters

11. Write the linear equations that describe the diagonals of this trapezoid. What is one property of these diagonals?
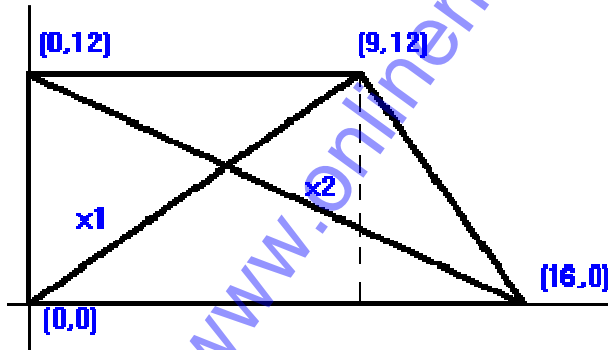
(a) Y1 is perpendicular to Y2

(b) Y1 is parallel to Y2

(b) Y1 is symmetric to Y2

(d) None of these

---

12. Joe buys a cup of coffee that costs $1.08. He pays with a two dollar coin. If the cashier gives him 8 coins for his change, what could these coins be?

(a) 0.92   (c) 0.63

(b) 0.22   (d) 0.53

13. Bacteria in a Petri dish double the area they cover every day. If the dish is covered after 16 days, on what day was only one quarter of it covered?

(a) 14th day   (c) 15th day

(b) 13th day   (d) 12th day

---

14. The Town of Antigonish has decided to put a paved path around Columbus Field. The path will be built so that the area of the park remains the same. If the path is to be 3m wide...

a) What will be the perimeter of the path and the park? The dimensions of the park are 210m x 460m.

b) What will be the area of the paved portion of the park?

(a) 1364 m, 3056 m^2 (c) 1364 m, 4056 m^2

(b) 364 m, 4056 m^2 (d) 2364 m, 2056 m^2

15. Rachel and Stephanie earn $5.15/hour. Rachel works 13 hours each week and Stephanie works 20 hours per week. Stephanie does not get any paid vacation time. How long a vacation would Stephanie have to take to make the same amount of money as Rachel in one year?

(a) 15.3 weeks

(c) 20 weeks

(b) 16 weeks

(d) 18.2 weeks

16. The midpoints of the sides of a quadrilateral are joined. What fraction of the quadrilateral is shaded?

(a) 2/8

(c) 1/8

(b) 3/8

(d) 5/8

17. The sports commentator on the CFXU radio station summarized the points scored by the St. F. X. Basketball Team during this season as follows:

"The SMU scored a total of 1729 points in the last season. This year St. F. X. scored of 1653 points. ST. F.X. received 38 percent of the points for the total season of all 4 teams. SMU finished in second place. Acadia received only 14 percent of the points and was beaten for third place by Dalhousie by 50 points."

If there were only 4 teams in the season, how many points did Acadia team receive?
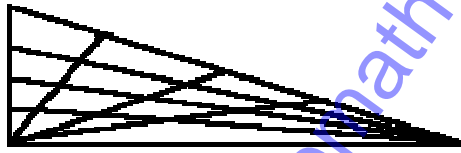
(a) 659

(c) 875

(b) 560

(d) 110

18.

This picture shows a triangle in which 3 lines are drawn to one or the other of the opposing sides from each of two vertices. This divides the triangle into 16 no overlapping sections.

If 4 lines are drawn in the same way, how many no overlapping sections will the triangle have?

(a) 16

(c) 36

(b) 49

(d) 25

19. An artist draws a picture of a house with a rose bush in front. In his picture the rose bush is 1.5cm high and the house is 7.5cm high. In reality the rose bush is .75 meters high. How tall is the house (in meters)?

(a) 5.75 m

(c) 1.75 m
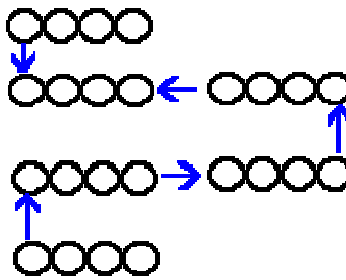
(b) 3.75 m

(d) 4.75 m

20. What is the value of 7!/6!

(a) 7   (c) 7!

(b) 6   (d) 6!

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21. There are 6 short pieces of link chain, each having 4 links. It takes 10 seconds to cut a link and 25 seconds to weld it back together. What is the shortest possible time to make the longest chain?

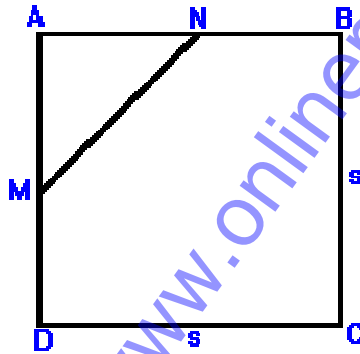(a) 244   (c) 175

(b) 100   (d) 256

22. M and N are the midpoints of the sides of a square. What is the ratio of the area of triangle AMN to the area of the complete square?

(a) 1/3

(c) 1/4

(b) 1/8

(d) 1/5

23. A boy ate 100 cookies in five days. Each day he ate 6 more than the day before. How many cookies did he eat on the first day?

(a) 5

(c) 7

(b) 6

(d) 8

24. Solve: $x^2 - 5x + 6 = 0$

(a) $x=2$, $x=3$ (c) $x=-2$, $x=-3$

(b) $x=-2$, $x=3$ (d) $x=2$, $x=-3$

25. A tire shop that sells only one size of tire, .75 meters in diameter, decides to sell tires for big rigs that are 1.5 meters in diameter. If the cost of the .75 meter tires is $100.00 for four, how much will it cost for the 18 tires required for a big rig? Prices increase proportionally with size.

(a) $350   (c) $900

(b) $1200   (d) $1050

26. 7 people want to stand for a photograph. In how many ways can a photographer arrange these people in a line?

(a) 5080   (c) 5060

(b) 5040   (d) 5020

27. The number of times a dog barks depends on the number of cars passing.

How many cars have passed when a dog barks 22 times?

```
Cars    Barks
------+-------
 6   |   4
 7   |   7
 8   |  10
 9   |  13
 10  |  16
```
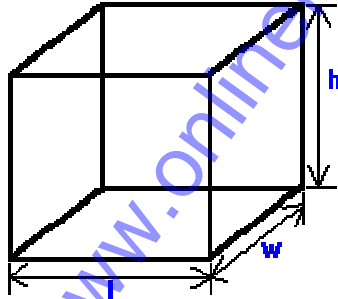
(a) 12

(b) 14

(c) 13

(d) 15

28. A cereal company decided to increase the height of its boxes by 30 percent and reduce the width in order to maintain the same volume.

If initially, length = 20cm
height = 40cm
width = 30cm
What will the new height and width be if length stays the same?

(a) 52 cm, 13.08 cm   (c) 42 cm, 23.08 cm

(b) 42 cm, 13.08 cm   (d) 52 cm, 23.08 cm

29. The number of hours left in a day on Mars was 1/4 of the number of hours that had already passed. How many hours were left in the day? (Day on Mars 40 hours)
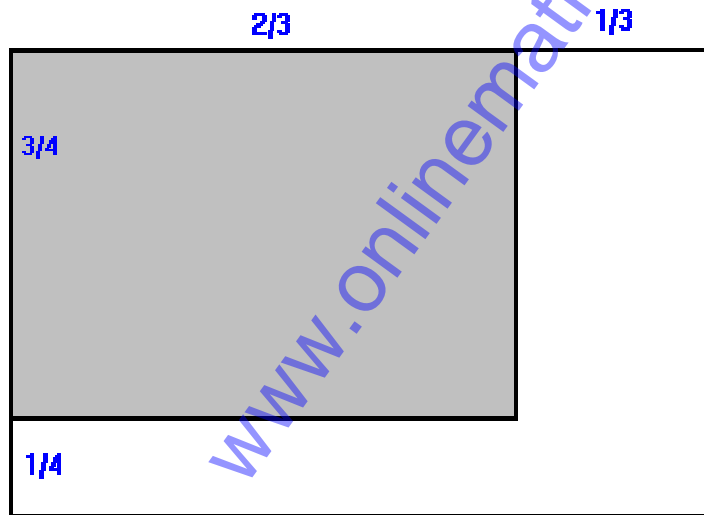
(a) 5   (c) 7

(b) 6   (d) 8

30. What fraction of this square is shaded?

2/3   1/3

3/4

1/4

(a) 30% (c) 50%

(b) 40% (d) 60%

31. Shawn started his car (automatic shift), drove 8km and spent 2 minutes at a stop light. Rachel (driving a manual shift) started her car and drove 9km with no stops. Who used more gas?

Table of Gas Usage

	Automatic	Manual
IDLING	.16 L/min	.16 L/min
STARTING	0.05 L	0.05 L
MOVING	1L/22 km	1L/20 km

(a) Both are equal   (c) Rachel

(b) Shawn   (d) None of these

---

32. Marvin's Taxi Service charges $0.30 for the first kilometer and $0.05 for each additional km. If the cab fare was $3.20, how far did the Taxi go?

(a) 59 km   (c) 53 km

(b) 48 km   (d) 46 km

33. A storage facility has space for 225 - 8 liter boxes and 515 - 27 liter boxes. What percent of the total volume is filled by 150 of the 8 liter boxes and 5 of the 27 liter boxes?
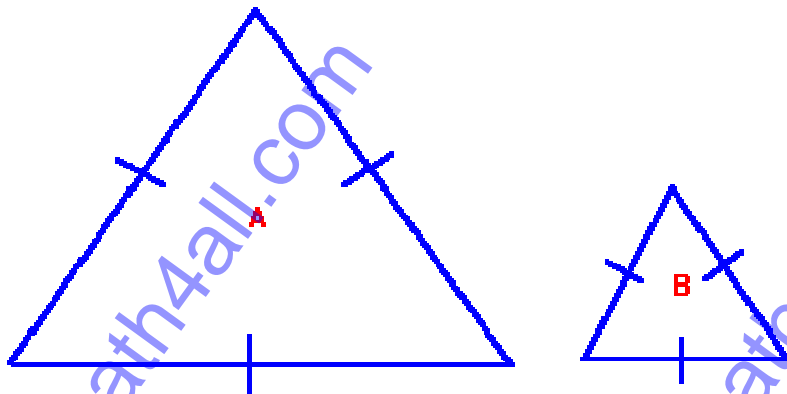
(a) 3.5%   (c) 5.5%

(b) 7.5%   (d) 8.5%

34.

A side of the equilateral triangle A is twice the length of a side of triangle B.

How many triangle B will fit into triangle A?

(a) 3   (c) 6

(b) 4   (d) 5

35. A car dealer claims that by buying a new car Mike will pay 1/5 less for gas then he pays for the car he currently drives. If the car Mike currently drives costs 1/6 less to gas up than Dave's car, and Dave pays $700.00 per year, what will it cost Mike to put gas in a new car for one year (assuming all cars will be traveling the same distance)?

(a) $866.67

(c) $466.67

(b) $566.67

(d) $666.67

36. Three people share a car for a period of one year and the mean number of kilometers traveled by each person is 152 per month. How many kilometers will be traveled in one year?

(a) 4336 km/year

(c) 5472 km/year

(b) 1756 km/year

(d) 2356 km/year

37. A rectangular chalk board is 3 times as long as it is wide. If it were 3 meters shorter and 3 meters wider, it would be square. What are the dimensions of the chalk board?

(a) 5 m, 7 m

(c) 1 m, 8 m

(b) 4 m, 8 m

(d) 3 m, 9 m

38. The rent-a-stall horse barn has stalls for 1000 horses. Forty percent of the stalls are for ponies. On Tuesday, there were 200 ponies and a bunch of quarter horses at the horse barn. The horse barn was 75 percent full.

How many quarter horses were in the stalls?

(a) 304   (c) 313

(b) 550   (d) 485

39. Jack was assigned a work on a Tuesday. He completed the work after 72 days. On what day did he complete the work?
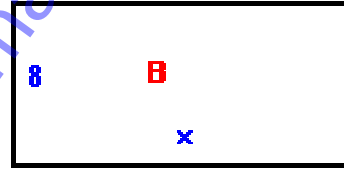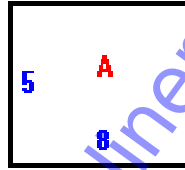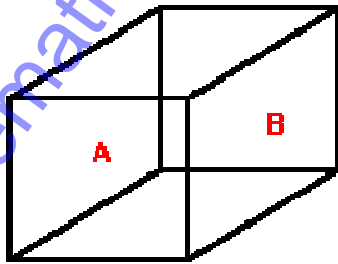
(a) Monday   (c) Thursday

(b) Wednesday   (d) Friday

40. Given a rectangular prism...

if the sides of the rectangle A have the same ratio to each other as the sides of rectangle B, then what is

  (a) The surface area of the prism?
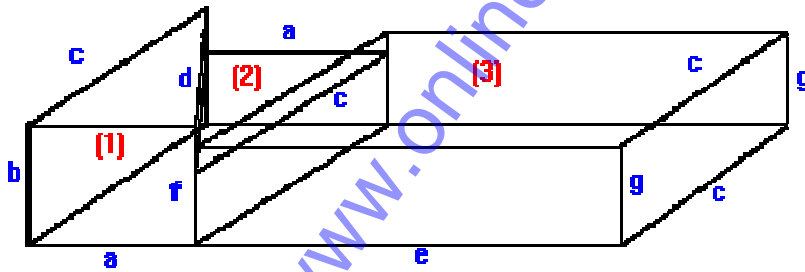 (b) The volume of the prism?

(a) 412.8, 512

(c) 312.8, 612

(b) 612.8, 312

(d) 512.8, 412

41. Air is pumped into a vacuum sealed picture below room at a rate of 2 liters per minute. How many seconds does it take to fill the room with air? Use the information given to find the volume of the room.

a = 3dm $1 \text{ mL} = 1 \text{ cm}^3$
b = 3dm $1000 \text{ mL} = 1L$
c = 4dm $1000 \text{ cm}^2 = 1 \text{ dm} = 1L$
d = 5dm
e = (3a - 1)dm
f = (1/2b)dm
g = (3/8a + 3/8b)dm

(a) 4970   (c) 1970

(b) 5970   (d) 2970

42. Stephanie had $40.00 savings. Her mother gave her another $30.00 and her grandmother gave her $10.00 to buy a pair of cleats. The pair of cleats Stephanie wants costs $54.99. If Stephanie buys the cleats at a no TAX sale, write an equation using a variable to describe the amount of money that Stephanie will have to contribute from her savings.

Solve for the variable.

(a) $24.99

(c) $34.99

(b) $14.99

(d) $44.99

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43. Mary has $50.00. She goes to the mall and buys lipstick and then she buys shampoo, which is half the price of the lipstick. She then spends half of what she has left on a purse, leaving her with $15.00.

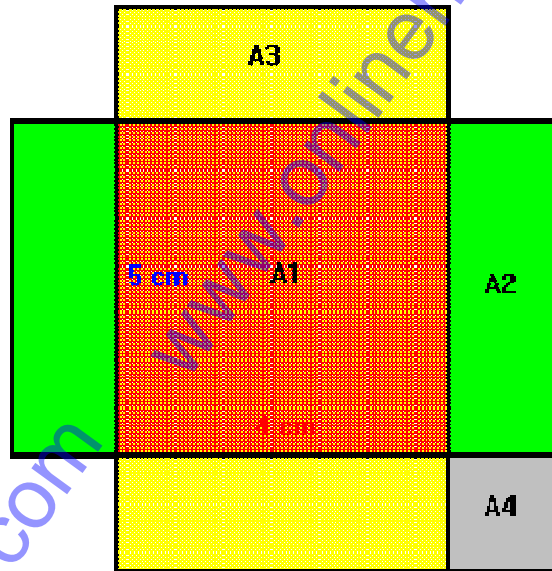How much did the shampoo cost?

How much did the lipstick cost?

(a) $6.67, $13.33

(c) $11.33, $5.67

(b) $4.67, $23.33

(d) $15.33, $3.67

44. A rectangular sheet of wood has four small squares removed. It is then cut to make a box that is 5cm by 4cm with a volume of $60cm^3$. (Four pieces of size A4 are removed.)

Find the original area of the sheet of wood.

(a) 220 cm^2 (c) 110 cm^2

(b) 440 cm^2 (d) 330 cm^2

45. In 1969 the price of 5 kilograms of flour was $0.75. In 1970 the price was increased 15 percent. In 1971, the 1970 price was decreased by 5 percent. What was the price of 5 kilograms of flour in 1971?

 (a) $0.52

(c) $0.72

(b) $0.62

(d) $0.82

46. A 800 seat multiplex is divided into 3 theatres. There are 270 seats in Theatre 1, and there are 150 more seats in Theatre 2 than in Theatre 3. How many seats are in Theatre 2?

(a) 310

(c) 340

(b) 360

(d) 460

47. A farmer grows 252 kilograms of apples. He sells them to a grocer who divides them into 5 kilogram and 2 kilogram bags. If the grocer uses the same number of 5 kg bags as 2kg bags, then how many bags did he use in all?

(a) 72

(c) 35

(b) 64

(d) 56

48. It takes one man one day to dig a 2m x 2m x 2m hole. How long does it take 3 men working at the same rate to dig a 4m x 4m x 4m hole?

(a) 7/3 days

(c) 7/3 days

(b) 5/3 days

(d) 8/3 days

49. Three ducks and two ducklings weigh 32 kg. Four ducks and three ducklings weigh 44kg. All ducks weigh the same and all ducklings weigh the same. What is the weight of two ducks and one duckling?

(a) 40 kgs

(c) 20 kgs

(b) 10 kgs

(d) 30 kgs

50. Solve the system of equations given below.

$$-x - 8y = -22$$
$$-7x + 3y = -36$$

(a) (2, 1)

(c) (3, 5)

(b) (4, 6)

(d) (6,2)

Answers:

1. a   2. d   3. b   4. c   5. a   6. b

7. c   8. d   9. b   10. c   11. a   12. a

13. a   14. c   15. d   16. b   17. a   18. d

19. b   20. a   21. c   22. b   23. d   24. a

25. c   26. b   27. a   28. d   29. d   30. c

31. b   32. a   33. d   34. b   35. c   36. c

37. d   38. b   39. c   40. a   41. d   42. b

43. a   44. c   45. d   46. c   47. a   48. d

49. c   50. d