1. The graph of y = (x+2) * (x-3) intersects the x axis at points A and B. Find the length of AB.

(a) 3

(c) 5

(b) -2

(d) 1

2. The average age of a group of teachers and professors is 40. If the teachers average 35 years and the professors 50 years, then what is the ratio of the number of teachers to professors?

(a) 4:5

(c) 1:2

(b) 2:1

(d) 3:2

3. Form a quadratic equation with rational coefficients having 2 – 4√3 as one of its roots.

(a) x^2-4x+44

(c) x^2-4x-4

(b) x^2-4x+4

(d) x^2-4x-44

4. Find in what ratio will the total wages of the workers of a factory be decreased, if there be reduction in the number of workers in the ratio 15:11 and an increment in their wages in the ratio 22:25.

(a) 6:5

(c) 3:5

(b) 2:5

(d) 7:5

5. The denominator of a fraction exceeds the numerator by 5. And if 3 be added to both the fraction becomes 3/4. Find the fraction.

(a) 11/17

(c) 12/17

(b) 10/17

(d) 9/17

6. Find the equation of a line passing through the point (5,-4) and parallel to the line 4x+7y+5=0.

(a) 7x+4y+8=0

(c) 4x+7y+8=0

(b) 8x+7y+4=0

(d) 4x+8y+7=0

7. In a soccer tournament the average of 8 goals scored in Caratine's first 5 games was 6.4. The average of her next five games was 6.5. If there were 9 goals scored in the tenth game, what was the overall average?

(a) 3.4

(c) 5.6

(b) 6.7

(d) 8.1

8. A person opened an account on April, 2001 with a deposit of $800. The account paid 6% interest compounded quarterly. On October1, 2001 he closed the account and added enough additional money to invest in a six month time deposit for $1000, earning 6% compounded monthly. How much additional amount did the person invest on October1?

(a) $205.82

(c) $175.82

(b) $185.72

(d) $195.72

9. Given the following information find the area of triangle AEB.

Lines:
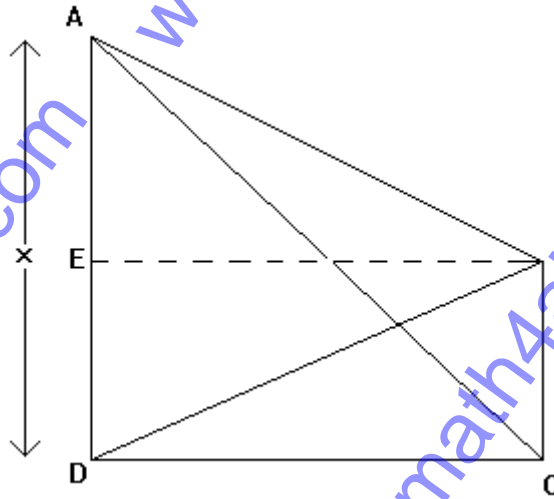
      The length of AE is not equal to the length of AD

      EB is parallel and equal in length to DC

      The length of AD=the length of DC

      The area of triangle ADC =8

      The area of triangle BDC=3

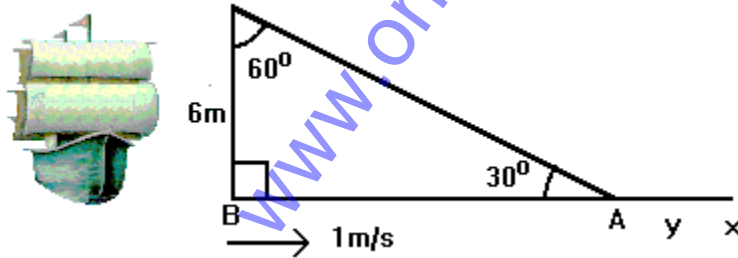   Angle DAB is a right angle

(a) 2 square units   (c) 4 square units

(b) 3 square units   (d) 5 square units

10. The lookout on a pirate ship is keeping his eyes open for land. From his perch 6m above the water he can only look down at a 60 degree angle. He cannot see the land (x) from his position at t = 0 but in 3 seconds it comes into view. What was the distance from the ship's position at t=0 to land?

(a) 16.39 m

(c) 13.39 m

(b) 14.39 m

(d) 15.39 m

11. There are six books on Economics, three on Mathematics and two on Accountancy. In how many ways can these be placed on a shelf if the books on the same subject are to be together?
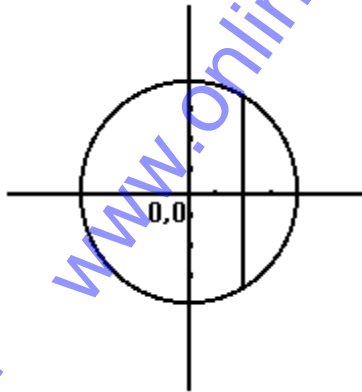
(a) 51840

(c) 51842

(b) 51841

(d) 51843

12. The algebraic equation of a circle with its center at (0,0) is $x^2 + y^2 = r^2$. Given a circle of radius 4 and a chord of this circle which is the perpendicular bisector of a radius, find the length of a chord.
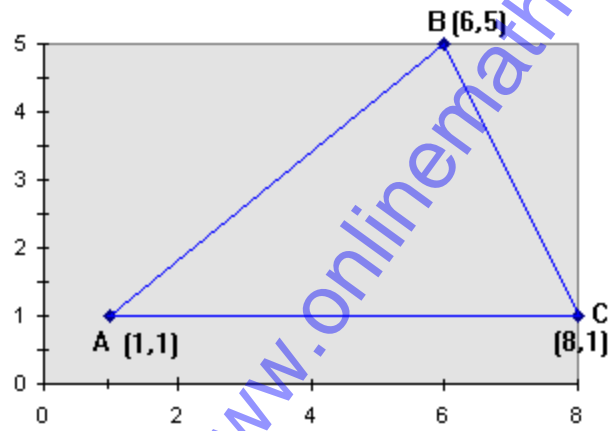

0,0

(a) $\sqrt{46}$

(c) $\sqrt{48}$

(b) $\sqrt{47}$

(d) $\sqrt{49}$

13. Find the area of triangle ABC.
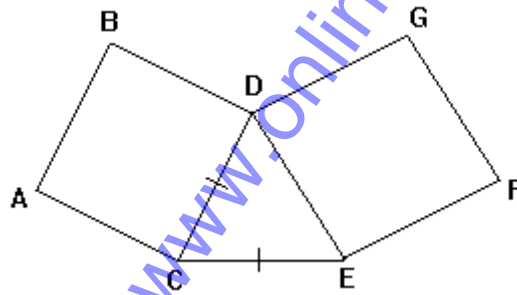

B [6,5]
A [1,1]   C [8,1]

(a) 12 square units

(b) 13 square units

(c) 14 square units

(d) 15 square units

14. Given a figure with squares ABCD and EFGD not equal, and knowing CE = CD and angle DEC = 40 degrees, find angle BDG.

B   G
D
A   F
C   E

(a) 240°

(b) 220°

(c) 100°

(d) 140°

15. A pennant is made in the shape of an isosceles triangle. A baseball team wants to fly two of its pennants side by side. The pennants are of different sizes and the team wants the flag poles spaced so that the distance between them is h + g.
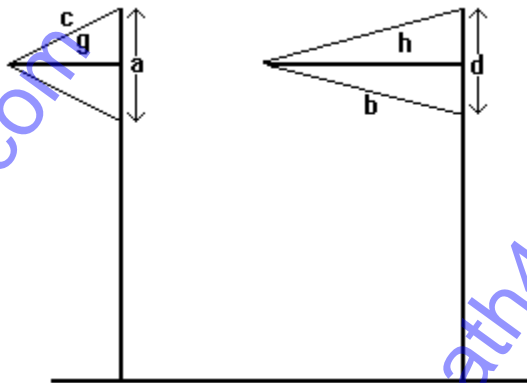
Given the following information...

$a = 2\sqrt{3}$ $c = 2$
$d = \sqrt{3}$ $b = \sqrt{28}/2 = \sqrt{7}$

How far apart will the flag poles be?

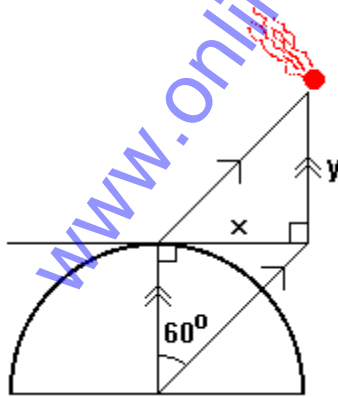(a) 3.5   (c) 4.5

(b) 4   (d) 5

16. The distance from an observation point to a comet at a given time is known to be 3.5 million kilometers. Given that a line drawn from the comet to the observation point is parallel to a line going through the center of the earth, find the values of x and y.
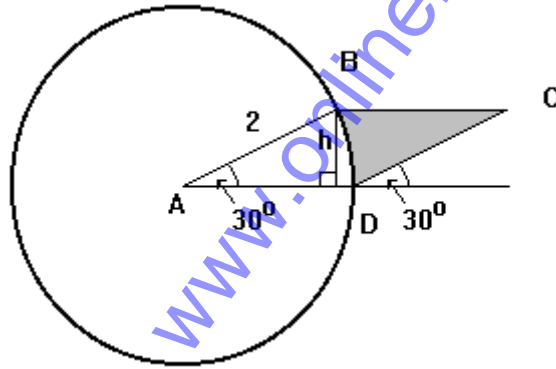

(a) x=18, y=13

(b) x=18, y=12

(c) x=18, y=23

(d) x=8, y=13

17. Given a circle with center A and radius 2. If ABCD is a parallelogram, find the area of the shaded region. Area parallelogram = b*h

(a) 0.09528

(c) 0.9528

(b) 9.528

(d) 95.28

18. Divide 69 in to three parts which are in A.P and are such that the product of the first two parts is 483.

(a) 21, 23, 25

(c) 20, 24, 25

(b) 22, 23, 24

(d) 18, 23, 28

19. A solid metal cylinder of radius 14 cm and height 21 cm is melted down and recast in to sphere of diameter 7 cm. Calculate number of spheres can be made.
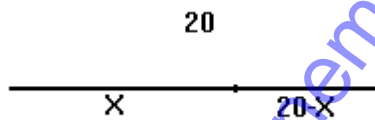
(a) 70

(c) 72

(b) 71

(d) 73

20. Brendan and Shawn were out for a bike ride when the tire fell off Brendan's bike. They were 20km from home. They decide that Brendan will walk for a while and Shawn will take the bike, leaving it further along and walking the rest of the way. When Brendan reaches the bike, he will bike home. Brendan walks at 5km/h and rides at 12km/h. Shawn walks at 4km/h and rides at 10km/h. How far should Shawn ride the bike for both to arrive home at the same time?

(a) 12.5 km

(c) 13.5 km

(b) 22.5 km

(d) 24.5 km

21. The cost of a lunch of 3 sandwiches, 7 cups of coffee and 1 donut is \$3.15. The cost of a lunch of 4 sandwiches, 10 cups of coffee and 1 donut was \$4.20 at the same cafe.

How much will 1 sandwich, 1 cup of coffee and 1 donut cost?

(a) \$4.05

(c) \$2.05

(b) \$3.05

(d) \$1.05

22. Mary and Gary graduated from university together. Gary became a teacher and earned half what Mary earned for 5 years. Mary spent 1/3 of her money; Gary spent 1/4 every year for those 5 years. Greg has \$80,000 after 5 years. How much does Mary have?

(a) \$142222.22

(c) \$342222.22

(b) \$242222.22

(d) \$442222.22

23. A jeweler sells all of his merchandise for double what it cost him but he charges no tax to his customers. Instead he pays it out of his profits. A woman comes in to buy a ring one day and she notices a scratch on the band. The jeweler takes 1/4 of the price and sells the ring for $159.99.

What was the jeweler's profit? (Tax is 20%)

(a) $18.232

(c) $20.232

(b) $19.232

(d) $21.232

24. Given a trapezoid of area 126 and a = 6, b = 8, use the formula 1/2 (ah) + h(a + b) / 2 + 1/2 (bh) = 126 to solve for variable h, then find the perimeter of the trapezoid.

(a) 48.86

(c) 50.86

(b) 49.86

(d) 51.86

25. How many minutes is it until 5:00 if forty minutes ago it was four times as many minutes past 2 o'clock?
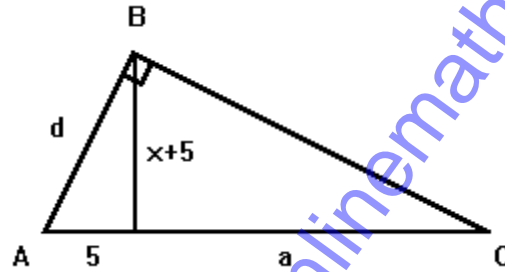
(a) 28 minutes

(c) 48 minutes

(b) 38 minutes

(d) 58 minutes

26.

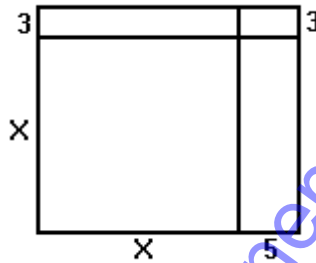Write a polynomial to describe the area of the triangle ABC.

(a) $0.1x^3 +1.5x^2 -7.5x +125$ (c) $0.1x^3 +1.5x^2 +7.5x +125$

(b) $0.1x^3 +1.5x^2 +7.5x -125$ (d) $0.1x^3 -1.5x^2 +7.5x +125$

27.

The Jones family had a square patch of lawn in their backyard. Its original area was x^2. They increased its length by 3 and its width by 5. Write a polynomial to describe the new area.

(a) $x^2+8x+15$ (c) $x^2+8x-15$

(b) x^2+8x+5 (d) x^2+8x-5

28. Find an odd number with 3 digits such that all the digits are different and add up to 15. The difference between the first two digits equals the difference between the last two digits. The hundreds digit is greater than the sum of the tens and ones digits.

(a) 393

(c) 843

(b) 951

(d) 771

29. A man in a speed boat which could only travel at 50km/h was driving his boat up a river which flowed with a constant speed. As he was driving his spare life jacket fell of the boat, 20 minutes later the man noticed the jacket was gone and turned back to get it. He found it 3km away from where he lost it. How fast was the river flowing?
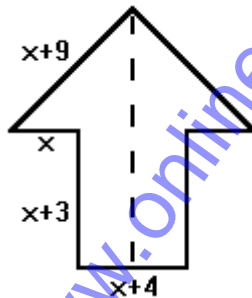
(a) 3.8 km/hr

(c) 1.23 km/hr

(b) 5.9 km/hr

(d) 4.13 km/hr

30. Given the symmetric shape below with a known perimeter of 77, find the area of the shape.

(a) 489.84

(c) 289.84

(b) 389.84

(d) 189.84

---

31. The sum of the infinite G.P $1-(1/3)+(1/9)-(1/27)+\ldots\ldots$ is

(a) 0.35

(c) 0.75

(b) 0.25

(d) 0.55

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32. If two finite sets A &B are said to be equivalent, then which of the following is true
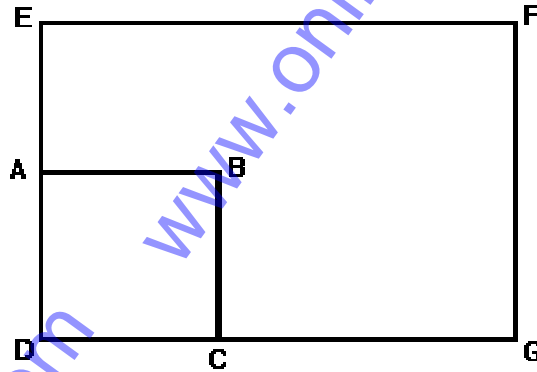
(a) A=B

(c) $n(A) > n(B)$

(b) $n(A) = n(B)$

(d) $n(A) \neq n(B)$

33. From the rectangle DEFG the square ABCD is removed, leaving an area of 92 square units. If AE is 4 and GC is 8 units, then use a polynomial expression to find the original area of DEFG.

```
E                         F



A          B



D        C                G
```

(a) 325 square units

(c) 117 square units

(b) 227 square units

(d) 99 square units

34. If a tire rotates at 150 revs/min when the truck is traveling 40km/h, what is the circumference of the tire?
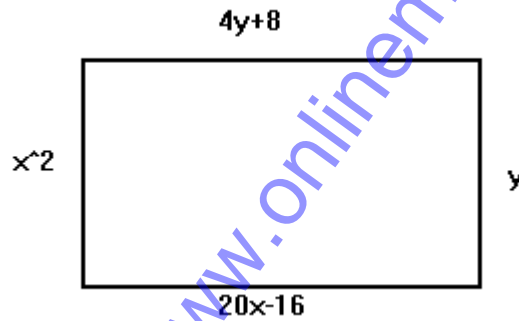
(a) 7.44 m

(c) 5.44 m

(b) 6.44 m

(d) 4.44 m

35. A rectangle has the following sides. One side must have an odd integer length. Find the perimeter.

4y+8 (top), x^2 (left), y (right), 20x-16 (bottom)

(a) 106 (c) 108

(b) 107 (d) 109

36. Two girls agree to go on a road trip together. They travel (x + 5) km on the first day. On the second day they travel 2km more than half of the distance they traveled on the first day. On the third day they drove 3 times as far as they did on the second day. If they drove 5000km total, find the value of x.

(a) 1656 (c) 1658

(b) 1657 (d) 1659

37. If a turntable rotates through 720 degrees in one second, how many revolutions does it make in one minute?

(a) 120 rev/min

(c) 122 rev/min

(b) 121 rev/min

(d) 123 rev/min

38. Joe was driving on the highway. A car ahead of him was driving far below the speed limit so he decided to pass. In the first second he gained 5m on the car and as he accelerated he gained 1.5 times as much distance in each second as he had the second before. If there was 30m between Joe and the car he was passing, then how long did it take him to pass?
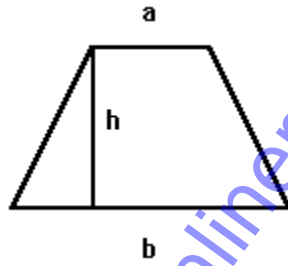
(a) 535/100 seconds

(a) 537/100 seconds

(b) 536/100 seconds

(d) 538/100 seconds

39.

The area of a trapezoid is given by the formula A = 1/2 (a + b) h.
If h = 1/2b and a = 1/3b.

a) What will be the value of b when a = 26 ?

b) What will be the value of h if a = 6?

(a) b=78, h=9   (c) b=79, h=10

(b) b=80, h=11   (d) b=81, h=12

40. Brendan went to Toronto to see a Blue Jays game. He had $650.00 for the trip. It cost him $40.00 for his ticket to the game, $216.00 to stay 2 nights at a hotel, $329.00 for his flight and $29.00 for food. He met a man on Young Street who was running a small casino. Brendan bet $5.00 in Black Jack and won an amount of money that was triple what he had left after making the bet. He spent half of this at the ball game. How much money did Brendan take home?

(a) $45

(b) $25

(c) $85

(d) $90

41. If twenty people in a factory make 43 shoes in √3 / 2 hours, then how many shoes do they make in an eight hour day?

(a) 396

(b) 397

(c) 398

(d) 399

42. A student at St. F. X. decided to become his own employer by using his car as a taxi for the summer. It costs the student $693.00 to insure his car for the 4 months of summer. He spends $452.00 per month on gas. If he lives at home and has no other expenses for the 4 months of summer and charges an average of $7.00 per fare, how many fares will he have to get to be able to pay his tuition of $3280.00?

(a) 820 fares

(b) 826 fares

(c) 832 fares

(d) 838 fares

43. Find the points of discontinuity of the function
$f(x)=(x^2+2x+5)/(x^2-3x+2)$

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

(b) $x=1, x=2$

(c) $x=5, x=1$

(d) $x=6, x=8$

44. Find the Geometric mean for the following distribution:

X:	2	4	8	16
F:	2	3	3	2

(a) 3.66

(b) 4.66

(c) 5.66

(d) 6.66

45. Find the Harmonic mean for 4, 6 and 10.

(a) 3.67

(c) 4.67

(b) 4.77

(d) 5.77

46. A pair of dice is thrown together and the sum of points of the two dice is noted to be 10. What is the probability that one of the two dice has shown at the point 4?

(a) 1/4

(c) 5/6

(b) 2/3

(d) 7/9

47. If 8 balls are distributed at random among three boxes, what is the probability that the first box would contain three balls?

(a) 1792/6561

(c) 1794/6563

(b) 1793/6562

(d) 1795/6564

48. What is the mode of the distribution for which mean and standard deviation are 10 and $\sqrt{5}$ respectively?

(a) 8

(c) 10

(b) 9

(d) 11

49. At the foot of a mountain, the elevation of its summit is 45°, after ascending 2 km towards the mountain up a slope of 30° inclination, the elevation is found to be 60°. Find the height of the mountain.

(a) 5.732 km

(c) 3.732 km

(b) 4.732 km

(d) 2.732 km

50. Find the orthocenter of the triangle ABC whose vertices are A(-2,-1), B(-1,-4) and C(0, -5).

(a) (-9,-8)

(c) (-2,-3)

(b) (-4,-5)

(d) (-6,-7)

Answers:

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

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

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

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

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

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

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

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

49. d   50. a