1. If $x = 2n + 1$, what is the value of x when $n = 10$?

   A) 11
   B) 13
   C) 20
   D) 21
   E) 211

Did you use the calculator on this question?

○ Yes ○ No

2. Which of the following types of graph would be best to show the change in temperature recorded in a city every 15 minutes over a 24-hour period?

   A) Pictograph
   B) Circle graph
   C) Line graph
   D) Box-and-whisker plot
   E) Stem-and-leaf plot

Did you use the calculator on this question?

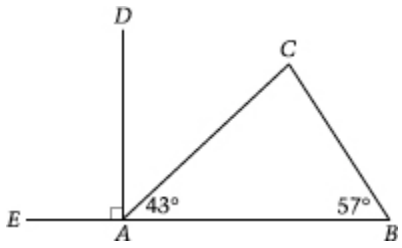
○ Yes ○ No

3. It costs $0.25 to operate a clothes dryer for 10 minutes at a laundromat. What is the total cost to operate one clothes dryer for 30 minutes, a second for 40 minutes, and a third for 50 minutes?

   A) $3.25
   B) $3.00
   C) $2.75
   D) $2.00
   E) $1.20

Did you use the calculator on this question?

○ Yes ○ No



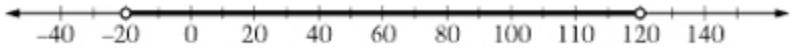
4. In the figure above, what is the measure of angle *DAC*?

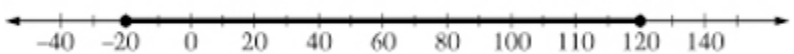
A) 47°
B) 57°
C) 80°
D) 90°
E) 137°

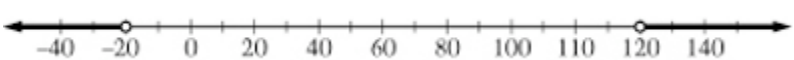
Did you use the calculator on this question?

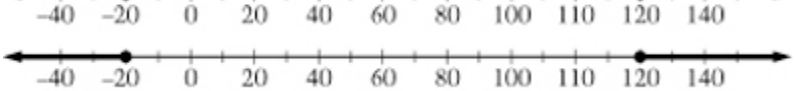
○ Yes ○ No

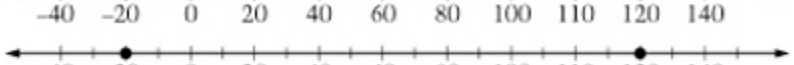
5. Weather records in a city show the coldest recorded temperature was -20° F and the hottest was 120° F. Which of the following number line graphs represents the range of recorded actual temperatures in this city?

A)


B)


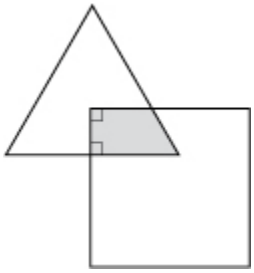
C)


D)


E)


Did you use the calculator on this question?

○ Yes ○ No



6. In the figure above, the intersection of the triangle and the square forms the shaded region. What is the shape of this region?

A) An equilateral triangle
B) A rectangle
C) A square
D) A rhombus
E) A trapezoid

Did you use the calculator on this question?

○ Yes ○ No

7. Add the numbers $\frac{7}{10}$, $\frac{7}{100}$, and $\frac{7}{1{,}000}$. Write this sum as a decimal.

_____

Did you use the calculator on this question?

○ Yes ○ No

8. Peter bought 45 sheets of plywood at a total cost of $400. He plans to sell each sheet of plywood for $15. If Peter has no other expenses, what is the fewest number of sheets he must sell to make a profit?

A) 3
B) 15
C) 16
D) 26
E) 27

Did you use the calculator on this question?

○ Yes ○ No

9. The formula $d = 16t^2$ gives the distance d, in feet, that an object has fallen t seconds after it is dropped from a bridge. A rock was dropped from the bridge and its fall to the water took 4 seconds. According to the formula, what is the distance from the bridge to the water?

A) 16 feet
B) 64 feet
C) 128 feet
D) 256 feet
E) 4,096 feet

Did you use the calculator on this question?

○ Yes ○ No

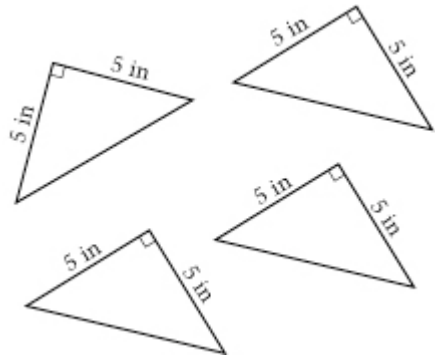
10. How many 200-milliliter servings can be poured from a pitcher that contains 2 liters of juice?

A) 20
B) 15
C) 10

D) 5
E) 1

Did you use the calculator on this question?

○ Yes ○ No



11. Make a drawing in the space below to show how the four triangles shown above could fit together without overlapping to make a rectangle that is not a square. Show the dimensions of the rectangle on your drawing. What is the area of this rectangle?

Did you use the calculator on this question?

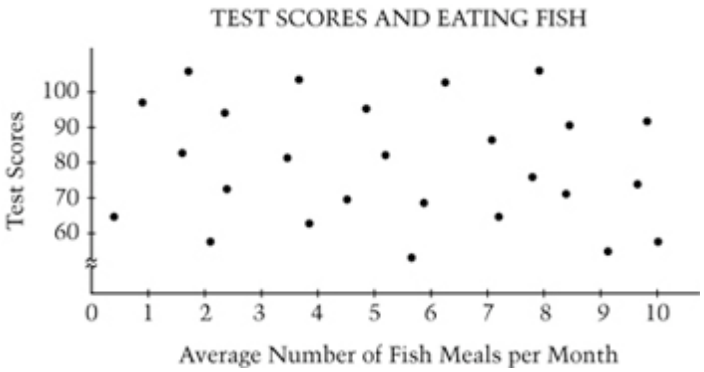
○ Yes ○ No

12. Mr. Hardt bought a square piece of carpet with an area of 39 square yards. The length of each side of this carpet is between which of the following?

A) 4 yards and 5 yards
B) 5 yards and 6 yards
C) 6 yards and 7 yards
D) 7 yards and 8 yards
E) 9 yards and 10 yards

Did you use the calculator on this question?

○ Yes ○ No



13. For a science project, Marsha made the scatterplot above that gives the test scores for the students in her math class and the corresponding average number of fish meals per month. According to the scatterplot, what is the relationship between test scores and the average number of fish meals per month?

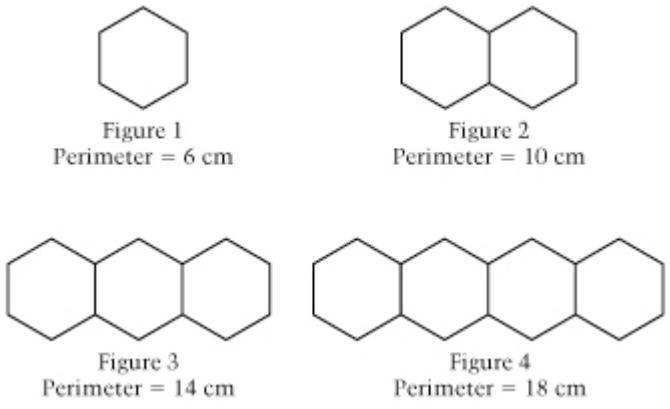
A) There appears to be no relationship.
B) Students who eat fish more often score higher on tests.
C) Students who eat fish more often score lower on tests.
D) Students who eat fish 4-6 times per month score higher on tests than those who do not eat fish that often.
E) Students who eat fish 7 times per month score lower on tests than those who do not eat fish that often.

Did you use the calculator on this question?

○ Yes ○ No

14.

Each figure in the pattern below is made of hexagons that measure 1 centimeter on each side.



If the pattern of adding one hexagon to each figure is continued, what will be the perimeter of the 25th figure in the pattern?

Show how you found your answer.

Did you use the calculator on this question?

○ Yes ○ No

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Number Sold, *n*	4	0	5	2	3	6
Profit, *p*	$2.00	$0.00	$2.50	$1.00	$1.50	$3.00

15. Angela makes and sells special-occasion greeting cards. The table above shows the relationship between the number of cards sold and her profit. Based on the data in the table, which of the following equations shows how the number of cards sold and profit (in dollars) are related?

A) $p = 2n$
B) $p = 0.5n$
C) $p = n - 2$
D) $p = 6 - n$
E) $p = n + 1$

Did you use the calculator on this question?

○ Yes ○ No

16. The figure above shows two right angles. The length of *AE* is *x* and the length of *DE* is 40.

Show all of the steps that lead to finding the value of *x*. Your last step should give the value of *x*.

Did you use the calculator on this question?

○ Yes ○ No

17. What is the greatest number of 30-cent apples that can be purchased with $5.00 ?

A) 6
B) 15
C) 16
D) 17

E) 20

Did you use the calculator on this question?

○ Yes ○ No

18. Consider each of the following expressions. In each case, does the expression equal $2x$ for all values of x ?

Fill in one oval to indicate YES or NO for each expression.

		Yes	No
a)	2 times x	○	○
b)	x plus x	○	○
c)	x times x	○	○

Did you use the calculator on this question?

○ Yes ○ No

(1, 1)	(2, 1)	(3, 1)
(1, 2)	(2, 2)	(3, 2)
(1, 3)	(2, 3)	(3, 3)

19. A pair of numbers will be chosen at random from the list above. What is the probability that the first number in the pair will be less than the second number in the pair?

Answer: _____

Did you use the calculator on this question?

○ Yes ○ No

20. If $15 + 3x = 42$, then x =

A) 9
B) 11
C) 12
D) 14
E) 19

Did you use the calculator on this question?

○ Yes ○ No

21. Of the following, which is the best estimate for the area of a typical classroom floor?

A) 700 feet
B) 700 square feet
C) 700 cubic feet
D) 700 yards
E) 700 square yards

Did you use the calculator on this question?

○ Yes ○ No

22. In a contest, a prize of 2.72 million dollars was split equally among 32 winners. How much money did each of the 32 winners receive?

A) $0.085
B) $62,500
C) $62,502.25
D) $85,000
E) $850,000

Did you use the calculator on this question?

○ Yes ○ No

23. Tammy scored 52 out of 57 possible points on a quiz. Which of the following is closest to the percent of the total number of points that Tammy scored?

A) 0.91%
B) 1.10%
C) 52%
D) 91%
E) 95%

Did you use the calculator on this question?

○ Yes ○ No

24.

The table below shows the number of customers at Malcolm's Bike Shop for 5 days, as well as the mean (average) and the median number of customers for these 5 days.

Number of Customers at Malcolm's Bike Shop	
Day 1	100
Day 2	87
Day 3	90
Day 4	10
Day 5	91
Mean (average)	75.6
Median	90

Which statistic, the mean or the median, best represents the typical number of customers at Malcolm's Bike Shop for these 5 days?

Explain your reasoning.

Did you use the calculator on this question?

○ Yes ○ No

25. The sum of three numbers is 173. If the smallest number is 23, could the largest number be 62?

○ Yes ○ No

Explain your answer in the space below.

Did you use the calculator on this question?

○ Yes ○ No

26.

Sarah has a part-time job at Better Burgers restaurant and is paid $5.50 for each hour she works. She has made the chart below to reflect her earnings but needs your help to complete it.

(a) Fill in the missing entries in the chart.

Hours Worked	Money Earned (in dollars)
1	$5.50
4	
	$38.50
$7\frac{3}{4}$	$42.63

(b) If Sarah works h hours, then, in terms of h, how much will she earn?

Did you use the calculator on this question?

○ Yes ○ No

27.

Benita and Jeff each surveyed some of the students in their eighth-grade homerooms to determine whether chicken or hamburgers should be served at the class picnic. The survey forms are shown below.

Benita's Survey
Homeroom: 8-A
Number of Students in Homeroom: 23

Student Surveyed	Chicken	Hamburger
Adam	✓	
Carlene	✓	
Nancy	✓	
Hugh	✓	

Jeff's Survey
Homeroom: 8-B
Number of Students in Homeroom: 20

Student Surveyed	Chicken	Hamburger
Becky		✓
Tanya	✓	
Joe	✓	
Ben		✓
Abby		✓
Linc	✓	
Marian		✓
Han		✓
Chris		✓
Tina		✓
Nate		✓
Darrell		✓

Benita reported that 100 percent of those in her survey wanted chicken. Jeff reported that 75 percent of those in his survey wanted hamburger.

Which survey, Benita's or Jeff's, would probably be better to use when making the decision about what to serve?

Explain why that survey would be better.

Did you use the calculator on this question?

○ Yes ○ No

28. In which of the following are the three fractions arranged from least to greatest?

A) $\frac{2}{7}, \frac{1}{2}, \frac{5}{9}$

B) $\frac{1}{2}, \frac{2}{7}, \frac{5}{9}$

C) $\frac{1}{2}, \frac{5}{9}, \frac{2}{7}$

D) $\frac{5}{9}, \frac{1}{2}, \frac{2}{7}$

E) $\frac{5}{9}, \frac{2}{7}, \frac{1}{2}$

Did you use the calculator on this question?

○ Yes ○ No

29. Three tennis balls are to be stacked one on top of another in a cylindrical can. The radius of each tennis ball is 3 centimeters. To the nearest whole centimeter, what should be the minimum height of the can?

Explain why you chose the height that you did. Your explanation should include a diagram.

Did you use the calculator on this question?

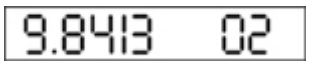
○ Yes ○ No

30. The temperature in degrees Celsius can be found by subtracting 32 from the temperature in degrees Fahrenheit and multiplying the result by $\frac{5}{9}$. If the temperature of a furnace is 393 degrees Fahrenheit, what is it in degrees Celsius, to the nearest degree?

A) 649
B) 375
C) 219
D) 201
E) 187

Did you use the calculator on this question?

○ Yes ○ No

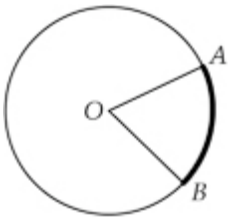


31. The figure above represents a calculator display showing a number in scientific notation. That number is

A) 0.098413
B) 0.98413
C) 19.6826
D) 98.413
E) 984.13

Did you use the calculator on this question?

○ Yes ○ No



32. The circle above has center O . If the length of the darkened arc is $\frac{1}{6}$ of the circumference, what is the degree measure of $\angle AOB$?

A) 75°
B) 60°
C) 45°
D) 36°
E) 30°

Did you use the calculator on this question?

○ Yes ○ No

33. Nick has a square piece of paper. He draws the two diagonals of the square, finds the point where they intersect, and labels that point *A*. Then he folds each of the four corners of the paper onto point *A*. What geometric shape is produced?

A) A square
B) A right triangle
C) An isosceles triangle
D) A pentagon
E) A hexagon

Did you use the calculator on this question?

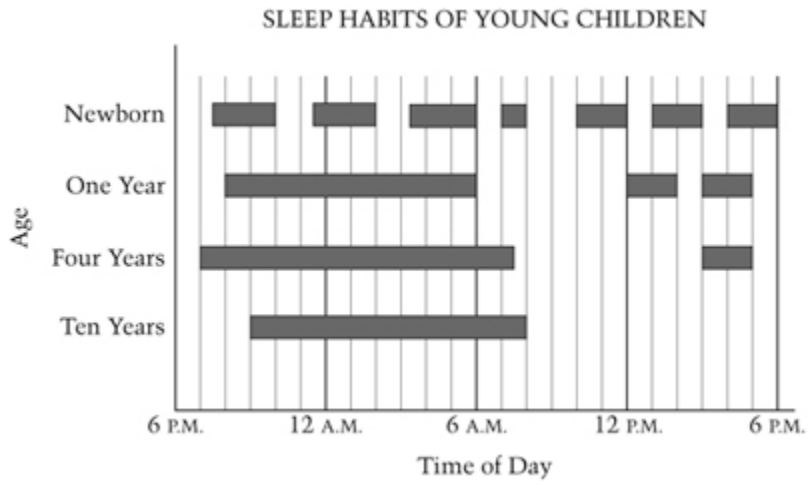
○ Yes ○ No

34.

The graph below and written summary on the next page present information about the sleep habits of newborn babies, one year olds, four year olds, and ten year olds. Each solid bar represents a period of sleep.

Some of the information presented in the summary does not agree with the information in the graph.

For example, there is an error in sentence 1 that has already been identified and corrected for you.



- In sentences 2 and 3 below, underline the information that is not correct based on the graph. There is an error in each statement.
- Then, write the correct information above the errors in sentences 2 and 3.

(1) According to research that has been done on sleep habits and patterns of sleep in children, the number of hours that a newborn baby sleeps in a 24-hour period of time is more less than that of a ten year old.

(2) From the time a child is born until it reaches age ten, the number of different time periods of sleep increases as the child grows older.

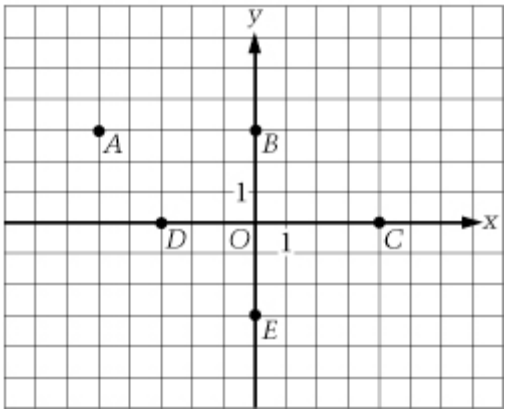
(3) Newborns need 2 more hours of sleep than ten year olds between 6 a.m. and 6 p.m.

Did you use the calculator on this question?

○ Yes ○ No

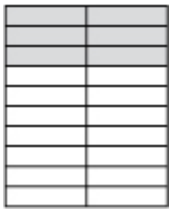
35. The weight of an object is 1,700 pounds, rounded to the nearest hundred. Of the following, which could be the actual weight of the object?

A) 1,640
B) 1,645
C) 1,649
D) 1,749
E) 1,751



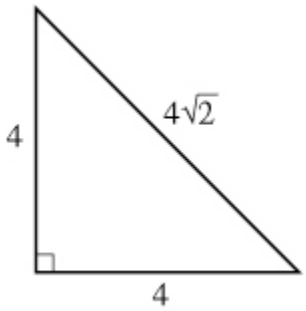
36. The graph above shows lettered points in an (*x*, *y*) coordinate system. Which lettered point has coordinates (-3, 0) ?

A) *A*
B) *B*
C) *C*
D) *D*
E) *E*



37. What fraction of the figure above is shaded?

A) $\frac{1}{4}$
B) $\frac{3}{10}$
C) $\frac{1}{3}$
D) $\frac{3}{7}$
E) $\frac{7}{10}$



38. What kind of triangle is shown above?

A) Equilateral
B) Isosceles
C) Scalene
D) Acute
E) Obtuse

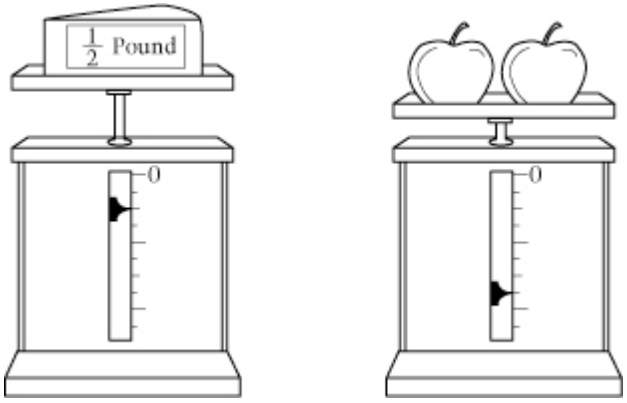
39. Which of the following numbers is five million, eighty thousand?

A) 5,800,000
B) 5,008,000
C) 5,000,008
D) 5,080,000
E) 580,000

40. If *m* represents the total number of months that Jill worked and *p* represents Jill's average monthly pay, which of the following expressions represents Jill's total pay for the months she worked?

A) $m + p$
B) $m \div p$
C) $m \times p$
D) $p \div m$
E) $m - p$

41. Both figures below show the same scale. The marks on the scale have no labels except the zero point.



The weight of the cheese is $\frac{1}{2}$ pound. What is the total weight of the two apples?

Total weight of the two apples = _____ pounds.

42. What is the intersection of rays *PQ* and *QP* in the figure above?

A) Segment *PQ*
B) Line *PQ*
C) Point *P*
D) Point *Q*
E) The empty set

43. Mika and her mother noticed the road sign shown above while in their car on their way to Rockville. If their speed is about 65 miles per hour, approximately how many more hours are needed to finish the trip?

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

E) 5

The booster club is planning to buy peanuts to serve at its meetings. The cost of the peanuts depends on the amount purchased, as shown in the table below.

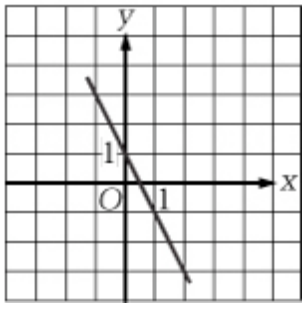
Total Number of Pounds Purchased	Cost of Peanuts Per Pound
0–5	$2.50
6–10	$2.25
11–20	$2.00
Over 20	$1.75

44. How much will 18 pounds of peanuts cost?

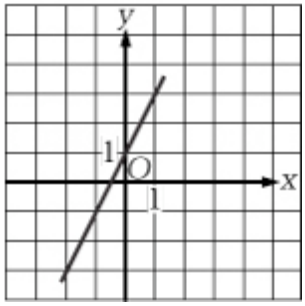
A) $31.50
B) $34.00
C) $36.00
D) $40.50
E) $45.00

45. Which of the following is the graph of the line with equation $y = 2x + 1$?

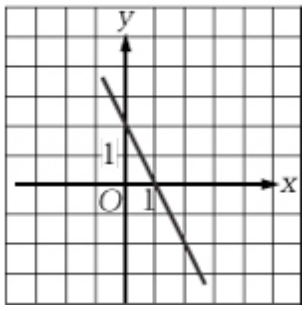
A)



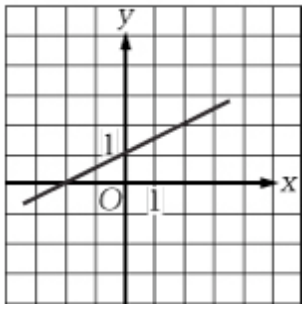
B)



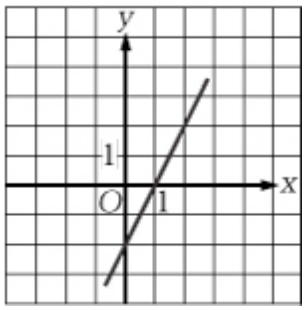
C)



D)



E)

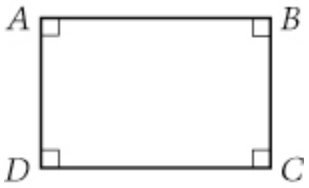


46. Mr. Elkins plans to buy a refrigerator. He can choose from five different refrigerators whose interior dimensions, in inches, are given below. Which refrigerator has the greatest capacity (volume)?

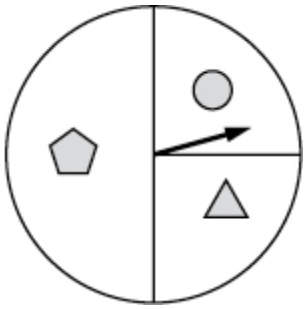
A) 42 x 34 x 30
B) 42 x 30 x 32
C) 42 x 28 x 32
D) 40 x 34 x 30
E) 40 x 30 x 28

47.

Sara was asked to draw a parallelogram. She drew the figure below.



Is Sara's figure a parallelogram? Why or why not?



48. If Rose spins a spinner like the one above 300 times, about how many times should she expect it to land on the space with a circle?

A) 75
B) 90
C) 100
D) 120
E) 150

49. At the school carnival, Carmen sold 3 times as many hot dogs as Shawn. The two of them sold 152 hot dogs altogether. How many hot dogs did Carmen sell?

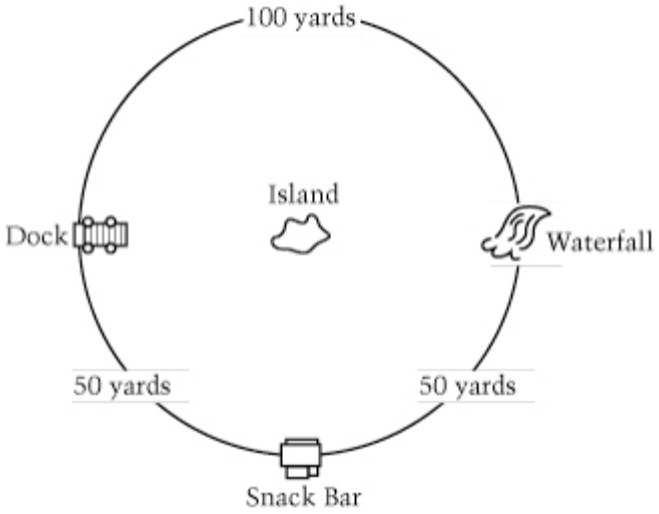
A) 21
B) 38
C) 51
D) 114
E) 148

50. Li’s English book weighs 3 pounds, her math book weighs 5 pounds, her history book weighs 4 pounds, and her science book weighs 6 pounds.How many different combinations of one or more books can Li pack in her backpack so that the total weight of the books is 12 pounds or less?

A) 9

B) 10
C) 11
D) 12
E) 18

The distance around a circular pond are shown below. From the snack bar, Jake notices an island in the center of the pond.



51. Of the following, which is the best approximation of the distance from the snack bar to the center of the island?

A) 16 yards
B) 20 yards
C) 32 yards
D) 50 yards
E) 64 yards

52.

At Jorge's local video store, "New Release" video rentals cost $2.50 each and "Movie Classic" video rentals cost $1.00 each (including tax). On Saturday evening, Jorge rented 5 videos and spent a total of $8.00.

How many of the 5 rentals were New Releases and how many were Movie Classics?

New Releases_____ Movie Classics_____

53. An airplane climbs at a rate of 66.8 feet per minute. It descends at twice the rate that it climbs. Assuming it descends at a constant rate, how many feet will the airplane descend in 30

minutes?

A) 96.8
B) 133.6
C) 1,002
D) 2,004
E) 4,008