



Diagnostic Test #1

Georgia High School Graduation Tests

Name: _____

1. Which describes the triangle shape used to make the pennant shown based on its sides.

A. equilateral



B. acute



C. right



D. isosceles



ANGLES

SIDES

THIS TRIANGLE IS ACUTE AND ISOSCELES.

ACUTE TRIANGLE: A TRIANGLE IN WHICH EACH INTERIOR ANGLE IS LESS THAN 90° .

ISOSCELES TRIANGLE: A TRIANGLE WITH EXACTLY 2 CONGRUENT SIDES.

2. Brian drives a taxi cab. His company charges \$2.50 and 40¢ per mile driven. A passenger wants to know how many miles Brian will drive him if he has \$10.00. Which algebraic expression can help Brian determine how far he can drive the customer for \$10.00.

A. $0.40(2.50 + x) = 10.00$

C. $10.00 - 2.50 + 0.40 = x$

B. $10.00 - 2.50 - 0.40x = y$

D. $2.50 + 0.40x = 10.00$

INITIAL AMOUNT COST PER MILE TOTAL

3. There are 14 boys and 16 girls in a 4th grade classroom. The teacher sends a student to the office to pick up copies. What are the chances that the teacher sent a boy to the office?

A. $\frac{1}{14}$

B. $\frac{7}{8}$

C. $\frac{1}{30}$

D. $\frac{7}{15}$

$\frac{14}{30} = \frac{\text{NUMBER OF BOYS}}{\text{TOTAL NUMBER OF STUDENTS}}$

REDUCES

$\frac{7}{15}$

4. Shirley wants to buy an 8 megapixel digital camera that normally is regularly priced at \$210.00. This weekend it is on sale for 40% off. How much would Shirley save if she bought it this week?

$40\% = 0.40$, $210 * 0.40 = 84$

A. \$126.00

B. \$52.50

C. \$40.00

D. \$84.00

5. What is the value of x, if $7x - 2 = 47$?

A. 6.43

C. 8.71

B. 7

D. 10

$$\begin{array}{r} 7x - 2 = 47 \\ + 2 \quad + 2 \\ \hline 7x = 49 \\ \div 7 \quad \div 7 \\ \hline x = 7 \end{array}$$

6. Kelly got a job working for a company that installs pay phones that paid \$11.50 per hour. During her first week on the job she worked 35 hours. Which operation should she use to find out how much she earned?

$\$11.50 * 35 =$

A. addition

B. subtraction

C. multiplication

D. division

7. Steve is building a house from a purchased set of blue prints. The blue print legend shows the diagram is a $\frac{1}{24}$ scale ($\frac{1}{2}$ inch = 1 foot). The main hallway of the house on the sketch is 11.5 inches long. How long will the actual hallway be when the house is built?

A. 5.75 feet

B. 2.08 feet

C. 23 feet

D. 27.6 inches

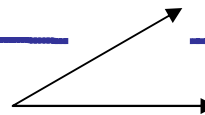
SCALED DRAWING: $\frac{1}{24} \times \frac{11.5 \text{ INCH}}{1 \text{ INCH}} = \frac{276 \text{ IN}}{12 \text{ IN}} = 23 \text{ FT}$

8. A crime scene investigator asked an assistant to rope off a circular perimeter around the crime scene using the yellow tape. If the assistant knows the approximate diameter of the crime scene what measure would the assistant need to find to determine how much yellow tape is needed?

A. density
B. volume

C. area
D. circumference

9. Which of the words below best describes the angle shown?



A. obtuse

B. supplementary

C. acute

D. isosceles

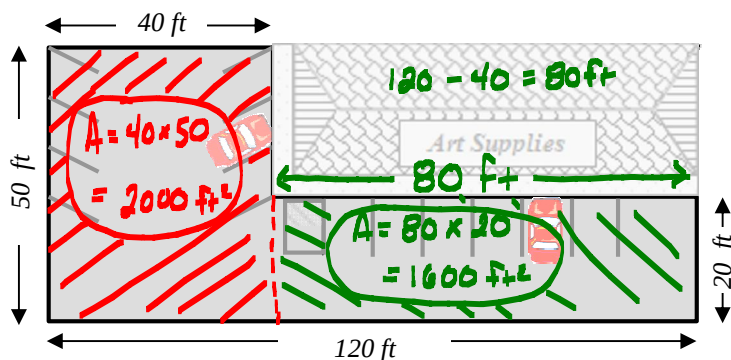
10. Dan borrowed \$950 to purchase a refrigerator at a fixed interest rate of 14% per year. If Dan paid the loan in full at the end of 2 years, then how much interest must he pay for the loan? (Using the formula $I = P \times R \times T$)

A. \$133.00
B. \$266.00

$$I = (\$950)(0.14)(2) = \$266$$

C. \$13,300.00
D. \$67.86

11. Jan needs to tell a city clerk the area of the parking lot surrounding her art-supply store. Can you find the area of the parking lot?



AREA:

$$\begin{array}{r} 2000 \text{ ft}^2 \\ + 1600 \text{ ft}^2 \\ \hline 3600 \text{ ft}^2 \end{array}$$

A. 3,600 ft²

B. 4,400 ft²

C. 6,000 ft²

D. 340 ft²

12. What is the value of 3^4 ? $3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81$

A. 12

B. 81

C. 18

D. 64

13. If $n = 6$ then determine the value of $n^2 - 4n$.

A. -12
B. -18

$$\begin{aligned} &= (6)^2 - 4(6) \\ &= 36 - 4(6) \\ &= 36 - 24 \\ &= 12 \end{aligned}$$

C. 12
D. 36

14. Which of the following could be the correct next step for solving the following system using elimination?

$$\begin{cases} 3x + 2y = 2 \\ x + 3y = 8 \end{cases}$$

A.
$$\begin{array}{r} x + 3y = 8 \\ -3y \quad -3y \\ \hline x = -3y + 8 \end{array}$$

*APPROPRIATE FOR SUBSTITUTION

C.
$$\begin{array}{r} 3x + 2y = 2 \\ -3 \cdot (x + 3y = 8) \\ \hline \end{array}$$

*CORRECT STEP TO "ELIMINATE" THE VARIABLE X.

B.
$$y = -\frac{3}{2}x + 1$$

$$y = -\frac{1}{3}x + \frac{8}{3}$$

*APPROPRIATE FOR GRAPHING

D.
$$\begin{array}{r} 3x + 2y = 2 \\ (+) \quad x + 3y = 8 \\ \hline \end{array}$$

$$4x + 5y = 10$$

*INCORRECT ELIMINATION

15. Use the number line to describe the location of the point A?



$2\frac{3}{4}$

A. $2\frac{2}{3}$

B. $2\frac{3}{4}$

C. $2\frac{4}{5}$

D. 3

16. Simplify the expression $\frac{12a - 16b}{4}$

A. $3a - 4b$

B. $3a - 16b$

$$\begin{aligned} &= \frac{12a}{4} - \frac{16b}{4} \\ &= 3a - 4b \end{aligned}$$

C. $12a - 4b$

D. $-ab$

17. A number is being rounded to the nearest unit. Which of the below descriptions would correctly describe the rounded number?

A. The rounded number is always lower than the actual answer.

C. The rounded number is always the same as the actual answer.

B. The rounded number is never lower than the actual answer.

D. The rounded number is sometimes lower than the actual answer.

18. Given $x = 6$, $y = 3$, and $z = 2$ evaluate the following expression: $x - 4y + z^3$

A. 2

B. 22

C. 14

D. -38

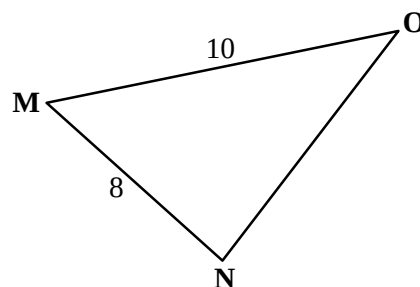
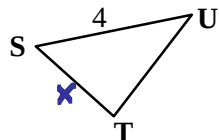
$$\begin{aligned} &= (6) - 4(3) + (2)^3 \\ &= 6 - 12 + 8 \\ &= -6 + 8 \\ &= 2 \end{aligned}$$

19. Determine the length of $\overline{ST}$, given $\triangle STU$ is similar to $\triangle MNO$.

$$\frac{\triangle STU}{\triangle MNO} : \frac{4}{10} \times \frac{x}{8}$$

$$\frac{10x}{10} = \frac{32}{10}$$

$$x = 3.2$$



A. 2.6

B. 3.2

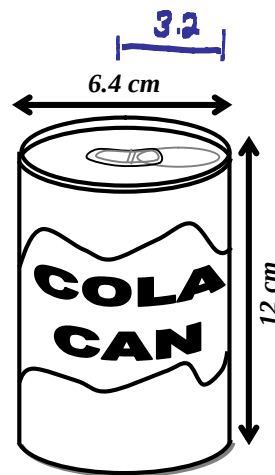
C. 5

D. 20

20. What is the approximate volume of a cola can? Use 3.14 for π , and the formula $V = \pi \cdot r^2 \cdot h$

$$= 3.14 (3.2)^2 (12)$$

$$\approx 385.84 \text{ cm}^3$$



A. 241.15 cm^3

C. 1543.37 cm^3

B. 385.84 cm^3

D. 2893.824 cm^3

Dollar Value Pledged by Country for Tsunami Relief

Great Britain



→ 100,000,000

Australia



800,000,000

United States



→ 350,000,000

Germany



→ 650,000,000

Canada



→ 350,000,000

Italy



→ 100,000,000

KEY



= \$100,000,000

~~100 M, 100 M, 350 M, 350 M, 650 M, 800 M~~

21. Using the pictograph above, what is the median contribution value?

A. \$100,000,000

B. \$391,666,667

C. \$350,000,000

D. \$800,000,000

22. Which of the Celsius temperatures below might represent a hot day in Georgia?

A. 37°C

$$= 98.6^{\circ}\text{F}$$

B. 84°C

$$= 183.2^{\circ}\text{F}$$

C. 70°C

$$= 158^{\circ}\text{F}$$

D. 100°C

$$= 212^{\circ}\text{F}$$

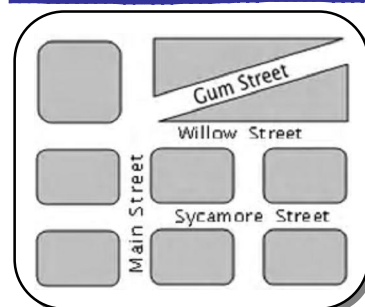
23. On the map, how could Main Street and Sycamore Street be described?

A. collinear

C. skew

B. perpendicular

D. parallel



24. T.J. was sick with a cold. He noticed he had used 30 Kleenex tissues in 2 hours time. The Kleenex box listed that there were 180 tissues in the box. At this rate how many hours will it take T.J. to use the entire box of tissues.

A. 6 hours

B. 12 hours

C. 18 hours

D. 24 hours

$$\begin{array}{l} \text{Tissue} \\ \text{Time} : \end{array} \frac{30}{2 \text{ hr}} \times \frac{180}{x}$$

$$\frac{360}{30} = \frac{30x}{30}$$

$$12 = x$$

25. Three friends Toni, Kelly, and Scott ordered pizza. The bill for pizza came to \$34.30. If they want to share the bill evenly, what operation should they use to determine how much each person owes?

A. addition

B. subtraction

C. multiplication

D. division

$$\frac{\$34.30}{3}$$

26. What would be the volume of the church steeple that is shown at the right in the shape of a pyramid? (Use the formula $V = \frac{l \cdot w \cdot h}{3}$.)

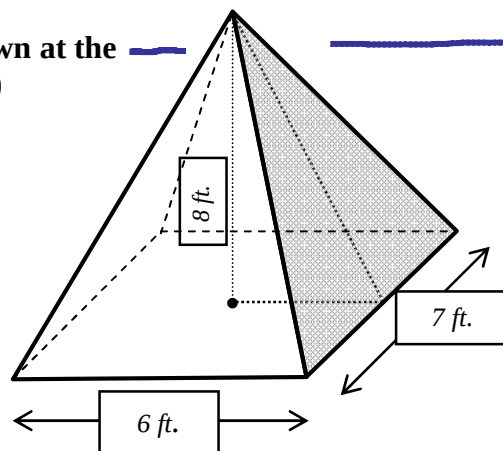
$$V = \frac{(6 \text{ ft}) (7 \text{ ft}) (8 \text{ ft})}{3} = 112 \text{ ft}^3$$

A. 7 cubic feet

C. 112 cubic feet

B. 84 cubic feet

D. 336 cubic feet



27. Choose the situation from the list below where approximate numbers would be expected.

A. Janet is paying a contractor to repair her roof. EXACT

B. An administrative assistant is purchasing computers for his company and is filling out the invoice for to submit to his employer. EXACT

C. Jill is preparing for a party and wants to make sure she has enough napkins, paper plates, and cups.

APPROX

D. The manager of a gas station is writing checks to her employees for payroll. EXACT

28. Marci is buying carpet for her bedroom. The carpet costs \$3.00 per square foot installed. The bedroom is 10 feet by 19 feet. Approximately how much should the carpet cost?

A. \$60

B. \$200

C. \$600

D. \$1200

ROUND TO

10 BY 20

AREA = $l \cdot w$

$\approx (10 \text{ ft})(20 \text{ ft}) = 200 \text{ ft}^2$

COST = 200×3
= \$600

29. Given the equation $2x + 3y - 6 = 0$, find the x and y intercepts

A. (0, 2) (3, 0)

B. (2, 0) (0, 3)

X-INT (, 0)

$2x + 3(0) - 6 = 0$

$2x - 6 = 0$

$2x = 6$

$x = 3$

C. (0, -2) (-3, 0)

D. (-2, 0) (0, -3)

Y-INT (0,)

$2(0) + 3y - 6 = 0$

$3y - 6 = 0$

$3y = 6$

$y = 2$

30. If two triangles have the same angles but have sides that are different lengths

A. the triangles are congruent to each other.

B. the triangle's sides are proportional.

C. the triangles have the same perimeter.

D. the triangles have the same area.

31. Which operation would be used to solve the equation $x - 6 = 20$?

A. addition

B. subtraction

C. multiplication

D. division

32. The approximate height of an regular classroom would be about:

A. 3 centimeters

B. 3 meters

C. 3 Decameters

D. 3 kilometers

33. Ken is riding in a new bullet train. It took Ken 1.5 hours to travel 183 miles, which proportion below would help Ken determine how long it would take to travel 428 miles?

A. $\frac{183}{428} = \frac{t}{1.5}$

B. $\frac{183}{t} = \frac{1.5}{428}$

C. $\frac{1.5}{428} = \frac{t}{183}$

D. $\frac{1.5}{183} = \frac{t}{428}$: $\frac{\text{TIME (HR)}}{\text{DIST. (MILES)}}$

34. Brian determined a bathtub holds 34 gallons and takes 8 minutes to fill. How many gallons will be in the bathtub after 5 minutes?

A. 8.4 gallons

B. 17 gallons

GALLONS : $\frac{34}{8} \times \frac{x}{5}$

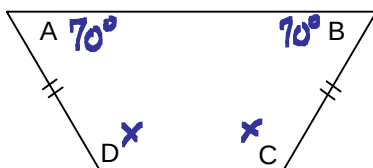
$8x = 170$
 $\frac{8x}{8} = \frac{170}{8}$

$x = 21.25$

C. 21.25 gallons

D. 24.75 gallons

35. Rob is building a chair in his industrial arts class. He is creating an isosceles trapezoid for the backing. Given $m\angle A = 70^\circ$, $m\angle B = 70^\circ$ find $m\angle D$.



$$\begin{aligned} 70^\circ + 70^\circ + x + x &= 360^\circ \\ 140 + 2x &= 360^\circ \\ -140 &\quad -140 \\ \hline 2x &= 220^\circ \\ \frac{2x}{2} &= \frac{220^\circ}{2} \\ x &= 110^\circ \end{aligned}$$

A. 70°

B. 110°

C. 130°

D. 290°

Life Expectancy of Animals

In the wild	Life Expectancy (yrs)	In captivity	Life Expectancy (yrs)
Lion	15	Lion	17
Deer	8	Cow	15
Elephant	38	Dog	12
Fox	7	Cat	12
Mouse	3	Mouse	3

36. What is the mode of the life expectancy of animals in captivity shown in the table?

A. 11.8

B. 12

C. 15

D. 17

↑
OCCURS THE MOST (MODE)

37. Determine the range of all the animal life expectancies shown in the table?

A. 3

B. 13

C. 35

D. 38

$$\begin{aligned} \text{RANGE} &= \text{HIGH} - \text{LOW} \\ &= 38 - 3 \\ &= 35 \end{aligned}$$

38. Using the correct order of operations evaluate: $15 - 5(7 - 3) \div 2 + 1$

A. -19

B. -13.33

C. 6

D. 8.33

$$\begin{aligned} 15 - 5(7 - 3) \div 2 + 1 &= 15 - 5(4) \div 2 + 1 \\ &= 15 - 20 \div 2 + 1 \\ &= 15 - 10 + 1 \\ &= 5 + 1 \\ &= 6 \end{aligned}$$

39. Given one side of a rectangle is 13 cm and the perimeter is 54 cm. What are the dimensions of the rectangle?

A. 4.15 cm $\times$ 13 cm

B. 14 cm $\times$ 13 cm

C. 27 cm $\times$ 13 cm

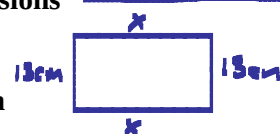
D. 41 cm $\times$ 13 cm

$$\begin{aligned} x + 13 + x + 13 &= 54 \\ 2x + 26 &= 54 \end{aligned}$$

$$\begin{aligned} 2x + 26 &= 54 \\ -26 &\quad -26 \\ \hline 2x &= 28 \end{aligned}$$

$$\begin{aligned} 2x &= 28 \\ \frac{2x}{2} &= \frac{28}{2} \end{aligned}$$

$$x = 14$$



40. Which description below would most likely describe the number 30024-4328.

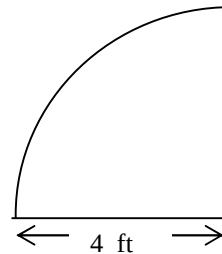
A. date

B. phone number

C. social security number

D. zip code

41. Toni is having a contractor build a space saving bathroom in her basement. She is having a stand up shower built that is in the corner of the bathroom. She needs to purchase some special floor tiles for the shower floor and will need to know the area of the floor in the shower. The floor of the shower is a quarter of a circle with a radius of 4 feet. Find the area of the floor.



A. 6.28 ft^2

B. 12.56 ft^2

C. 25.12 ft^2

D. 50.24 ft^2

$$\text{Area } \odot = \pi \cdot r^2$$

$$\approx (3.14)(4 \text{ ft})^2 = 50.24 \text{ ft}^2$$

$$\Delta = 50.24 \div 4 = 12.56 \text{ ft}^2$$

42. If Therese earned \$958.45 this month and must make a monthly payment on her car note \$245.00 this week, which operation should she use to find out how much money she has left after paying his care note?

A. addition

B. subtraction

C. multiplication

D. division

$$\begin{array}{r} \$958.45 \\ -245.00 \\ \hline \$713.45 \end{array}$$

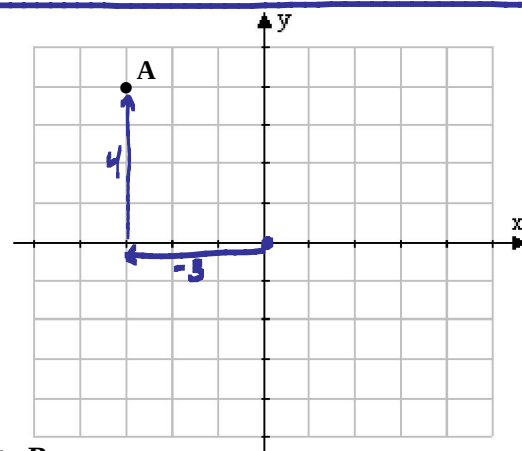
43. What are the coordinates of the point A, shown at the right?

A. $(-3, 4)$

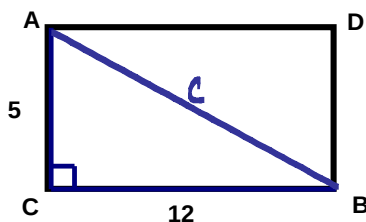
B. $(3, -4)$

C. $(4, -3)$

D. $(-4, 3)$



44. Given Rectangle ACBD find the length of the diagonal from A to B.



$$a^2 + b^2 = c^2$$

$$5^2 + 12^2 = c^2$$

$$25 + 144 = c^2$$

$$169 = c^2$$

$$\sqrt{169} = \sqrt{c^2}$$

$$13 = c$$

A. 13

B. 15

C. 17

D. 34

45. The distance from the earth to the sun approximately averages 491,040,000,000 feet. How can this number be expressed using scientific notation?

A. 0.49104×10^{12}

B. $49,104 \times 10^7$

C. 4.9104×10^{11}

D. 0.49104×10^{-12}



46. Jim bought Home Depot stock in 1999. What year was it worth the least since he bought it?

A. 1998

B. 2002

C. 2004

D. 2008

47. The gas to oil mixture for a particular two stroke engine is 3 quarts oil to 18 quarts of gasoline. What is the ratio of gas to oil?

A. $\frac{21}{3}$

$18:3$

C. $\frac{6}{1}$

B. $\frac{1}{7}$

$\frac{18}{3} = \frac{6}{1}$

D. $\frac{1}{6}$

48. Linda is the accountant for her company that has 83 employees and is determining this week's payroll today based on hours worked. What would be the most appropriate method for her to use?

A. mental arithmetic

*POTENTIAL FOR ERROR

B. estimation

* SHOULD BE EXACT

C. paper & pencil

* TOO TIME CONSUMING

D. computer

* BEST OPTION

49. Any two angles that have a sum of 180° can be described as:

A. Supplementary Angles

C. Full Angles

B. Complementary Angles

D. Congruent Angles

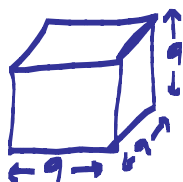
50. What is the volume of a cube that has an edge of 9 cm?

A. 729 cm^3

B. 486 cm^3

C. 81 cm^3

D. 36 cm^3



$$V = (9\text{cm})(9\text{cm})(9\text{cm})$$

$$= 729 \text{ cm}^3$$

51. Which unit would be most appropriate to measure the length of a school hallway? _____

A. centimeters

B. kilometers

C. meters

D. millimeters

52. Ngoc rolls two standard 6 sided dice. What are the chances she ends up rolling a "1" on both dice? _____

A. $\frac{1}{18}$

B. $\frac{1}{6}$

C. $\frac{1}{36}$

D. $\frac{1}{12}$



$$\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

53. Katrina is at the store and needs to know if she has enough cash to pay for a \$16.00 DVD plus 6% sales tax. She needs to know how much the sales tax will be to determine if she has enough money. How much would the sales tax be for her purchase? _____

A. \$6.00

B. \$0.61

C. \$1.00

D. \$0.96

$$(\$16.00) \cdot .06 = \$0.96$$

54. What geometrical shape best describes a baseball? _____

A. rectangular prism



B. sphere



C. cylinder



D. ellipsoid



55. A market research company found that 2 out of 15 parents of new born babies use Snuggles Diapers. If 840 babies were born in a large city one month, how many of those babies could we expect to use Snuggles Diapers? _____

A. 28

B. 56

C. 112

D. 340

$$\begin{array}{l} \text{LIKE SNUGGLES} : \frac{2}{15} \times \frac{x}{840} \\ \text{TOTAL PARENTS} \end{array}$$
$$15x = 1680$$
$$x = 112$$

56. Kevin is the principal of a school and is investigating size of each class. 12% of students are Freshman, 28% are Sophomores, 25% are Juniors, and 35% are seniors. What kind of graph would best to show the school's students? _____

A. line graph

B. pictograph

C. bar graph

D. circle graph

57. Megan is attending college in Athens, GA. Her home town is Valdosta, GA. Jennifer drove round trip 2 times last month. If this was the only driving that Megan did last month and the distance from Athens to Valdosta is 258 miles. Estimate the total number of miles he drove. _____

A. 500 miles

B. 1000 miles

C. 250 miles

D. 750 miles

ROUND TRIP $\approx$ 500 MILES

2 ROUND TRIPS =
1000 MILES

Roller Coaster	Top Speed
Deja Vu	65 mph
Mind Bender	50 mph
Mine Train	29 mph
Batman	50 mph
Wile E. Coyote	30 mph
Scream Machine	57 mph
Ninja	52 mph

STRICTLY GREATER

58. In the following chart, how many roller coasters have a top speed greater than 50 mph?

A. 2

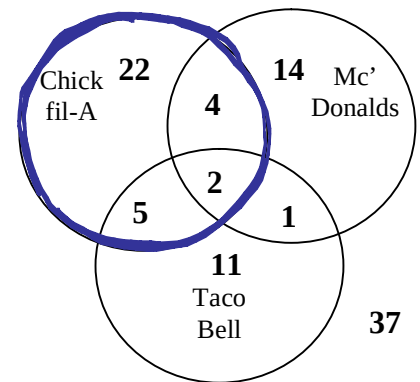
B. 3

C. 5

D. 7

59. A school nurse was conducting research about the students' nutritional habits. The nurse asked a sample of students if they had eaten at some of the nearby fast food restaurants during the last week. Some had eaten at more than one so the nurse made the following VENN diagram which shows where the students had eaten during the last week.

$$22 + 4 + 2 + 5 = 33$$



How many of the students in the sample ate a Chick-fil-A?

A. 11

B. 22

C. 31

D. 33

60. What percent of the business budget is not used for Gasoline?

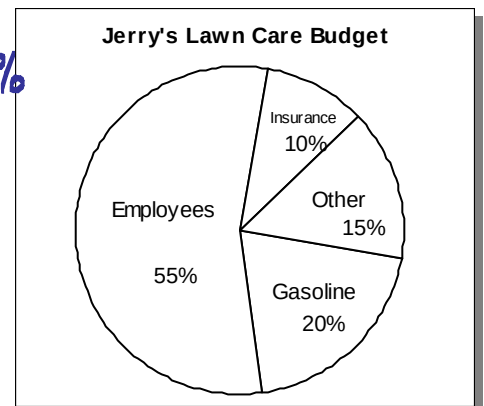
$$100\% - 20\% = 80\%$$

A. 20 %

B. 45%

C. 80%

D. 90%



61. Which of the following algebraic expressions corresponds to:

"Twice the difference of 6 and a number squared."

A. $2 \cdot (6 - n^2)$

$$2(6 - n^2)$$

C. $2 - 6 \cdot n^2$

B. $2 + 6 \cdot n^2$

D. $2 \cdot 6 - n^2$

62. Which of the below expressions uses the commutative property to rewrite the expression $3(2+x)+8$.

A. $(3 \cdot 2 + 3 \cdot x) + 8$ ← DISTRIBUTIVE

C. $3 \cdot 2 + (x+8)$ ← INCORRECT SIMPLIFICATION

B. $3(x+2)+8$

D. $3(2x)+8$ ← INCORRECT SIMPLIFICATION

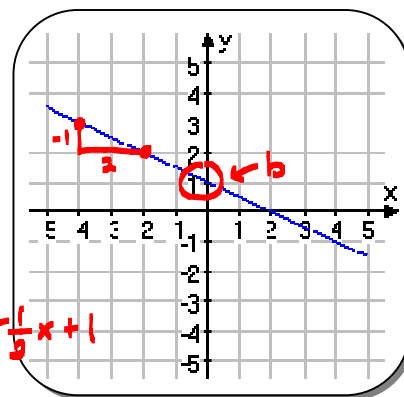
63. The graph shown at the right is the graph of which of the following equations?

A. $y = -x + 1$

C. $y = \frac{1}{2}x + 2$

B. $y = -\frac{1}{2}x + 1$

D. $y = -\frac{1}{2}x + 2$



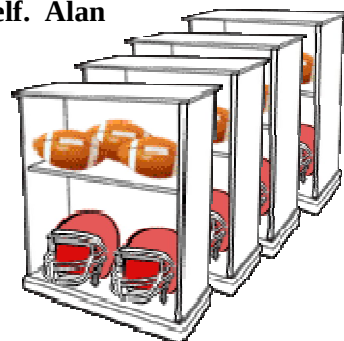
64. After football practice the coach asked Alan to count the total number of equipment on 4 bookshelves. Alan noticed that the exact same things were in each bookshelf. Alan determined that there were $4 \cdot (3 \text{ footballs}) + 4 \cdot (2 \text{ helmets}) = 20$ pieces of equipment. The coach suggested that next time it might be faster to instead determine the total in just one bookshelf $4 \cdot (3 \text{ footballs} + 2 \text{ helmets}) = 20$. Which property suggests that the two methods will always have the same result?

A. inverse property

C. commutative property

B. associative property

D. distributive property



65. There are 20 pieces of chocolate covered candies in a bag. The candies are pink and red. The probability of randomly selecting a piece of candy that is red is $\frac{3}{10}$. How many of the 20 pieces of candy must be pink?

A. 3

C. 6

B. 7

D. 14

$\frac{3}{10} = \frac{6}{20}$ RED TOTAL



66. Consider the Figures I and II shown. What transformation, if any, of Figure I is shown in Figure II?

A. Reflection

C. Rotation

B. Transformation

D. Dilation

