03-18-19
03-19-19 03-20-19
03-21-19

Student: _____ **Instructor:** Alfredo Alvarez **Assignment:** MATH7-8THGRADEWARM145MR OK
Date: _____ **Course:** Math 0410 / 0320 Alvarez

1. Fill in the blank below.

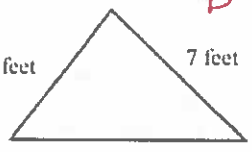
The numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,... are called _____ numbers.

The numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,... are called (1) whole numbers.

(1) ○ whole
○ natural

Answer: (1) whole

2. Find the perimeter of the figure.



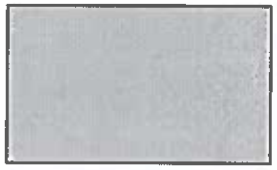
A B C

P = A + B + C
P = 5 + 7 + 10
P = 12 + 10
P = 22

The perimeter is [ ] feet.

Answer: 22

3. Find the area and the perimeter of the rectangle shown to the right.



L W

The area of the rectangle is [ ] (1) [ ]

The perimeter of the rectangle is [ ] (2) [ ]

P = 2L + 2W
P = 2(7) + 2(5)
P = 14 + 10
P = 24

(1) ○ square meters. (2) ○ cubic meters.
○ meters. ○ square meters.
○ cubic meters. ○ meters.

A = LW
A = (7)(5)
A = 35

Answers 35

(1) square meters.

24

(2) meters.

4. One triple fudge brownie contains 115 calories. How many calories are in 7 triple fudge brownies?

_____ calories

Answer: 805

$\frac{1}{115} = \frac{7}{N}$

$1(N) = 115(7)$

$N = 805$

$115 \times 7 = 805$

5. Find the average value of the following list of numbers.

10, 22, 22, 26, 15, 19

The average value is _____.

Answer: 19

$\frac{10+15+19+22+22+26}{6} = \frac{114}{6} = 19$

$6 \overline{)114}$, $-(6)$, 54, $-(54)$, 0, so $114 \div 6 = 19$

6. Simplify.

$32 + 7 \cdot 4$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $32 + 7 \cdot 4 =$ _____
- B. The expression is undefined.

Answer: A. $32 + 7 \cdot 4 =$ 60

$32 + 7 \cdot 4 =$

$32 + 28 =$

$60 =$

$32 + 28 = 60$

7. Simplify.

$6 \cdot 8 + 7 \cdot 7$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $6 \cdot 8 + 7 \cdot 7 =$ _____
- B. The expression is undefined.

Answer: A. $6 \cdot 8 + 7 \cdot 7 =$ 97

$6 \cdot 8 + 7 \cdot 7 =$

$48 + 7 \cdot 7 =$

$48 + 49 =$

$97 =$

$48 + 49 = 97$

8. Evaluate the expression for $x = 2$ and $z = 4$.

$6xz - 5x$

$6xz - 5x =$ _____

Answer: 38

$6xz - 5x =$

$6(2)(4) - 5(2) =$

$6(8) - 5(2) =$

$48 - 10 =$

$38 =$

$48 - 10 = 38$

9. Evaluate the expression for x = 2, y = 5, and z = 4.

$\frac{x+2y}{z}$

$\frac{x+2y}{z}$ = ____

Answer: 3

$\frac{x+2y}{z} =$

$\frac{(2)+2(5)}{(4)} =$

$\frac{2+10}{4} =$

$\frac{12}{4} =$

$3 =$

10. Evaluate the algebraic expression for the given value.

$x^2 - 5x + 8$, for x = 7

When x = 7, $x^2 - 5x + 8$ = ____. (Simplify your answer.)

Answer: 22

$x^2 - 5x + 8 =$

$(7)^2 - 5(7) + 8 =$

$(7)(7) - 5(7) + 8 =$

$49 - 35 + 8 =$

$14 + 8 =$

$22 =$

$49 - 35 = 14$

$14 + 8 = 22$

11. Fill in the blank below.

The numbers ... − 3, − 2, − 1, 0, 1, 2, 3,... are called _____.

The numbers ... − 3, − 2, − 1, 0, 1, 2, 3,... are called (1) integers

(1) ○ whole numbers. ○ integers.
○ natural numbers.
○ positive numbers.
○ negative numbers.

Answer: (1) integers.

12. Add: − 7 + 5

− 7 + 5 = ____

Answer: − 2

$-7 + 5 =$

$-2 =$

13. Add.

− 41 + 58

− 41 + 58 = ____

Answer: 17

$-41 + 58$

$17 =$

$58 - 41 = 17$

14. Subtract.

5 − 6

5 − 6 = ____

Answer: − 1

5−6=
−1=

15. Subtract.

− 6 − 4

− 6 − 4 = ____

Answer: − 10

−6−4=
−10=

16. Multiply.

− 6(− 5)

− 6(− 5) = ____

Answer: 30

−6(−5)=
30=

17. Multiply.

− 5(6)

− 5(6) = ____

Answer: − 30

−5(6)=
−30=

18. Multiply.

3(− 3)

3(− 3) = ____

Answer: − 9

3(−3)=
−9=

19. Find the quotient.

$\frac{-42}{7}$ = −6

Select the correct choice below and fill in any answer boxes in your choice.

○ **A.** $\frac{-42}{7}$ = _____

○ **B.** The answer is undefined.

Answer: A. $\frac{-42}{7}$ = **−6**

20. Find the quotient.

$\frac{-33}{-11}$ = 3

$\frac{-33}{-11}$

Select the correct choice below and fill in any answer boxes in your choice.

○ **A.** $\frac{-33}{-11}$ = _____

○ **B.** The answer is undefined.

Answer: A. $\frac{-33}{-11}$ = **3**

21. Find the following quotient.

$\frac{38}{-2}$ = −19

$\frac{38}{-2}$

Select the correct choice below and fill in any answer boxes in your choice.

$-2\overline{)38}$ → 19, −(2), 18, −(18), 0

○ **A.** $\frac{38}{-2}$ = _____

○ **B.** The answer is undefined.

Answer: A. $\frac{38}{-2}$ = **−19**

22. Simplify.

$\frac{17-11}{-2}$

$\frac{17-11}{-2}$ = [ ]

Answer: −3

$\frac{17-11}{-2} =$

$\frac{6}{-2} =$

$-3 =$

23. Solve. Check your solution.

$x + 4 = 21$

The solution is x = [ ].

Answer: 17

$x+4=21$

$x+4-4=21-4$

$x=17$

Check $x+4=21$

$(17)+4=21$

$17+4=21$

$21=21$

Good

24. Solve. Check your solution.

$d - 1 = -6$

The solution is d = [ ].

Answer: −5

$d-1=-6$

$d-1+1=-6+1$

$d=-5$

Check $d-1=-6$

$(-5)-1=-6$

$-5-1=-6$

$-6=-6$

Good

25. Solve. Check your solution.

$25 = y - 6$

The solution is y = [ ].

Answer: 31

$25=y-6$

$25+6=y-6+6$

$31=y$

Check $25=y-6$

$25=(31)-6$

$25=31-6$

$25=25$

Good

26. Solve.

$2x = 4$

The solution is x = [ ].

Answer: 2

$2x=4$

$\frac{2x}{2}=\frac{4}{2}$

$x=2$

Check $2x=4$

$2(2)=4$

$4=4$

Good

27. Solve.

$-2z = 6$

The solution is z = [ ].

Answer: −3

$-2z=6$

$\frac{-2z}{-2}=\frac{6}{-2}$

$z=-3$

Check

$-2z=6$

$-2(-3)=6$

$6=6$

Good

28. Solve.

$\frac{n}{7} = -8$

The solution is n = [ ].

Answer: −56

$\frac{n}{7} = -8$

$7\left(\frac{n}{7}\right) = 7(-8)$

$n = -56$

Check

$\frac{n}{7} = -8$

$\frac{-56}{7} = -8$

$-8 = -8$

Good

29. Solve.

$11z = -99$

The solution is z = [ ].

Answer: −9

$11z = -99$

$\frac{11z}{11} = \frac{-99}{11}$

$z = -9$

Check $11z = -99$

$11(-9) = -99$

$-99 = -99$

Good

30. Solve.

$-3x = -3$

The solution is x = [ ].

Answer: 1

$-3x = -3$

$\frac{-3x}{-3} = \frac{-3}{-3}$

$x = 1$

Check

$-3x = -3$

$-3(1) = -3$

$-3 = -3$

Good

31. Solve the equation. First combine any like terms on each side of the equation.

$x - 9 = -8 + 3$

The solution is x = [ ].

Answer: 4

$x - 9 = -8 + 3$

$x - 9 = -5$

$x - 9 + 9 = -5 + 9$

$x = 4$

Check

$x - 9 = -8 + 3$

$(4) - 9 = -8 + 3$

$4 - 9 = -8 + 3$

$-5 = -5$

Good

32. Solve the following equation.

$7x - 14 = 0$

x = [ ]

Answer: 2

$7x - 14 = 0$

$7x - 14 + 14 = 0 + 14$

$7x = 14$

$\frac{7x}{7} = \frac{14}{7}$

$x = 2$

Check $7x - 14 = 0$

$7(2) - 14 = 0$

$14 - 14 = 0$

$0 = 0$

Good

33. Solve the equation.

$5n + 20 = 25$

n = [ ]

Answer: 1

$5n + 20 = 25$

$5n + 20 - 20 = 25 - 20$

$5n = 5$

$\frac{5n}{5} = \frac{5}{5}$

$n = 1$

Check $5n + 20 = 25$

$5(1) + 20 = 25$

$5 + 20 = 25$

$25 = 25$

Good

34. Solve the equation.

$2x - 6 = 3x + 3$

$x =$ ____

Answer: -9

$2x - 6 = 3x + 3$
$2x - 6 + 6 = 3x + 3 + 6$
$2x = 3x + 9$
$2x - 3x = 3x + 9 - 3x$
$-1x = 9$
$\frac{-1x}{-1} = \frac{9}{-1}$
$x = -9$

35. Solve the equation.

$20 - 5x = 13 + 2x$

$x =$ ____

Answer: 1

$20 - 5x = 13 + 2x$
$20 - 5x - 20 = 13 + 2x - 20$
$-5x = 2x - 7$
$-5x - 2x = 2x - 7 - 2x$
$-7x = -7$
$\frac{-7x}{-7} = \frac{-7}{-7}$
$x = 1$

36. Solve the equation.

$37 + 6y - 1 = 16y - 12 - 2y$

$y =$ ____

Answer: 6

$37 + 6y - 1 = 16y - 12 - 2y$
$6y + 36 = 14y - 12$
$6y + 36 - 36 = 14y - 12 - 36$
$6y = 14y - 48$
$6y - 14y = 14y - 48 - 14y$
$-8y = -48$
$\frac{-8y}{-8} = \frac{-48}{-8}$
$y = 6$

37. Solve the equation.

$-3c + 1 = -8$

$c =$ ____

Answer: 3

$-3c + 1 = -8$
$-3c + 1 - 1 = -8 - 1$
$-3c = -9$
$\frac{-3c}{-3} = \frac{-9}{-3}$
$c = 3$

38. Find the prime factorization of the following number.

42

The prime factorization of 42 is ____.

Answer: $3 \cdot 2 \cdot 7$

Primes 2, 3, 5, 7, 11, 13, ...

$2 \overline{)42}$
$3 \overline{)21}$
$7 \overline{)7}$
1

$42 = 2 \cdot 3 \cdot 7$

39. Find $\frac{1}{4}$ of 140.

$\frac{1}{4}$ of 140 is ____. (Simplify your answer. Type a whole number, fraction, or mixed number.)

Answer: 35

$\frac{1}{4}(140) =$
$\frac{1}{4}\left(\frac{140}{1}\right) =$
$\frac{140}{4} =$

$4 \overline{)140}$ (35)
$-(12)$
20
$-(20)$
0

$35 =$

40. Find $\frac{4}{9}$ of 63. Write the answer in simplest form.

$\frac{4}{9}$ of 63 is [ ]. (Simplify your answer.)

Answer: 28

$\frac{4}{9}(63) = \frac{4}{9}\left(\frac{63}{1}\right) = \frac{(2)(2)\ (3)(3)(7)}{(3)(3)\ (1)} = \frac{(2)(2)(3)(3)(7)}{(3)(3)} = 28$

Primes 2, 3, 5, 7, 11, 13, ..

$2|4\quad 3|9\quad 3|63$

$2|2\quad 3|3\quad 3|21$

$1\quad\quad 1\quad\quad 7|7$

$\quad\quad\quad\quad\quad\quad 1$

41. Subtract and check the following.

$15 - 3.5$

$15 - 3.5 =$ [ ] (Type an integer or a decimal.)

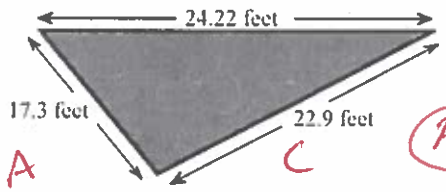
Answer: 11.5

15.0

$-\ 3.5$

11.5

42. A landscape architect is planning a border for a flower garden shaped like a triangle. The sides of the garden measure 17.3 feet, 24.22 feet, and 22.9 feet. Find the amount of border material needed.



The amount of border material needed is [ ] feet.
(Type an integer or a decimal.)

Answer: 64.42

$P = A + B + C$

$P = 17.3 + 24.22 + 22.9$

$P = 64.42$

17.30

24.22

22.90

64.42

43. Use the values of the coins given below. Write the value of the group of coins shown to the right. To do so, it is usually easiest to start with the coin(s) of greatest value and end with the coin(s) of least value.

Penny	Nickel	Dime	Quarter
			
$0.01	$0.05	$0.10	$0.25

The total value of the group is $[ ].

Answer: 0.80

$.25 \times 2 = .50$

$.10 \times 2 = .20$

$.05 \times 2 = .10$

$.50 + .20 + .10 = 0.80$

44. Multiply.

$(-2.1)(9.12)$

$(-2.1)(9.12) =$ [ ] (Type an integer or a decimal.)

Answer: -19.152

negative times positive = negative

9.12×2.1

1912

1824

-19.152

Negative times negative = Positive

45. Multiply.

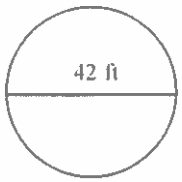
$(-5.99)(-9.7)$

$(-5.99)(-9.7) =$ _____ (Type an integer or a decimal.)

5.99
× 9.7
4193
53910
58.103

Answer: 58.103

46. Find the circumference of the circle in terms of π. Then use the approximation 3.14 for π and approximate the circumference.



$C = \pi D$
$C = \pi(42)$
$C = 42\pi$

$C = 3.14)$
$C = 3.14(42)$
$C = 131.88$

a. Find the circumference of the circle in terms of π.

The exact circumference is _____ ft.

b. Find the circumference of the circle using 3.14 as an approximation for π.

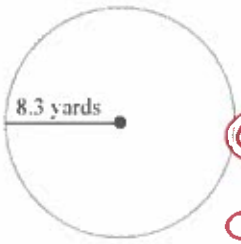
The approximate circumference is _____ ft. (Round to the nearest hundredth as needed.)

3.14
× 42
1628
12560
131.88

Answers 42π

131.88

47. Find the circumference of the circle in terms of π. Then use the approximation 3.14 for π and approximate the circumference.



$C = 2\pi r$
$C = 2\pi(8.3)$
$C = 16.6\pi$

$C = 2(3.14)r$
$C = 2(3.14)(8.3)$
$C = 2(26.062)$
$C = 52.124$

a. Find the circumference of the circle in terms of π.

The exact circumference is _____ yd.

b. Find the circumference of the circle using 3.14 as an approximation for π.

The approximate circumference is _____ yd. (Round to the nearest thousandth as needed.)

Answers 16.6π

52.124

48. A 1-ounce serving of cream cheese contains 9.4 grams of saturated fat. How much saturated fat is in 14 ounces of cream cheese?

[ ] g

Answer: 131.6

$\frac{1}{9.4} = \frac{14}{N}$

$1(N) = 9.4(14)$ cross mult

$N = 131.6$

9.4
× 14
376
94
131.6

49. The screen of a portable digital device is a rectangle that measures 4.5 inches by 3.6 inches. Find the area of the screen.

The area is [ ] square inches. (Type an integer or a decimal.)

Answer: 16.2

$A = LW$

$A = (4.5)(3.6)$

$A = 16.2$

4.5
× 3.6
270
135
16.20

50. The diameter of a ferris wheel is 150 feet. Find its circumference. Give an exact answer and an approximation using 3.14 for π.

The circumference is [ ] feet.
(Type an exact answer in terms of π.)

The circumference is approximately [ ] feet.
(Type an integer or a decimal. Round to the nearest hundredth as needed.)

Answers 150π

471.00

$C = \pi D$

$C = \pi(150)$

$C = 150\pi$

$C = \pi D$

$C = 3.14 D$

$C = 3.14(150)$

$C = 471.0$ w

51. A meter is a unit of length approximately equal to 39.37 inches. If someone is 1.71 meters tall, what is his or her approximate height in inches?

Using the given conversion, someone who is 1.71 meters tall has a height of [ ] inches.
(Type an integer or a decimal.)

Answer: 67.3227

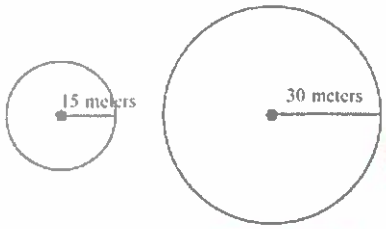
$\frac{1}{39.37} = \frac{1.71}{N}$

$1(N) = 39.37(1.71)$ cross mult

$N = 67.3227$

52. Consider the circles at the right.

$C = 2\pi r$



$r = 15$

a. Approximate the circumference of each circle. Use $\pi = 3.14$.

The circumference of the smaller circle is approximately ____ meters.
(Round to the nearest hundredth as needed.)
The circumference of the larger circle is approximately ____ meters.
(Round to the nearest hundredth as needed.)

$C = 2\pi r$
$C = 2(3.14)$
$C = 2(3.14)(15)$
$C = 2(47.1)$
$C = 94.20$

b. If the radius of a circle is doubled, is its corresponding circumference also doubled?

- ○ Yes
- ○ No

$C = 2\pi r$
$C = 2(3.14)(30)$
$C = 2(94.2)$
$C = 188.40$

Answers 94.20
188.40
Yes

53. Find the decimal equivalent of the following fraction.

$\frac{13}{20}$

$\frac{13}{20} =$ ____

$.65$
$20\overline{)13.00}$
-120
100
$-(100)$
0 rem

Answer: 0.65

54. Solve the following equation.

$2.4x = -21.84$

$x =$ ____ (Type an integer or a decimal.)

$2.4x = -21.84$
$\frac{2.4x}{2.4} = \frac{-21.84}{2.4}$
$x = -9.1$

Answer: −9.1

55. Solve the following equation.

$3.6y + 9.1 = 5.6y - 2.6$

The solution is ____. (Type an integer or a decimal.)

$3.6y + 9.1 = 5.6y - 2.6$
$3.6y + 9.1 - 9.1 = 5.6y - 2.6 - 9.1$
$3.6y = 5.6y - 11.7$
$3.6y - 5.6y = 5.6y - 11.7 - 5.6y$
$-2y = -11.7$
$\frac{-2y}{-2} = \frac{-11.7}{-2}$
$y = +5.85$

Answer: 5.85

56. Find the mean, median, and mode for the following set of numbers. If necessary, round the mean to one decimal place.

17, 25, 22, 12, 19 → 12, 17, 19, 22, 25

The mean is ____.
(Type an integer or decimal rounded to one decimal place as needed. Use a comma to separate answers as needed.)

The median is ____.
(Type an integer or decimal rounded to one decimal place as needed. Use a comma to separate answers as needed.)

Find the mode. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The mode is ____.
  (Type an integer or decimal rounded to one decimal place as needed. Use a comma to separate answers as needed.)
- B. There is no mode.

Answers 19

19

B. There is no mode.

$\frac{12+17+19+22+25}{5} = \frac{95}{5} = 19$ = mean

median 19

there is no mode

57. Solve the proportion.

$\frac{5}{6} = \frac{x}{18}$

$\frac{5}{6} = \frac{x}{18}$

x = ____ (Type an integer or a simplified fraction.)

$5(18) = 6(x)$ Cross mult

$90 = 6x$

$\frac{90}{6} = \frac{6x}{6}$

$15 = x$

Answer: 15

58. Medication is prescribed in 4 out of every 10 hospital emergency room visits that involve an injury. If a large urban hospital had 940 emergency room visits involving an injury in the past month, how many of these visits would you expect included a prescription for medication?

About ____ of these visits would be expected to include a prescription for medication.

Answer: 376

$\frac{4}{10} = \frac{N}{940}$

$4(940) = 10(N)$ Cross mult

$3760 = 10N$

$\frac{3760}{10} = \frac{10N}{10}$

$376 = N$

59. What is the sales tax on a jacket priced at $275 if the sales tax rate is 7%?

The sales tax is $____.

Answer: 19.25

$A = PT$

$A = \$275(7\%)$

$A = \$275(.07)$

$A = \$19.25$

60. A stereo normally priced at $299 is on sale for 35% off. Find the discount and the sale price.

The discount is $ _____.

The sale price is $ _____.

$A = P - PD$

$A = \$299 - \$299(35\%)$

$A = \$299 - \$299(.35)$

$A = \$299 - \$104.65$ discount

$A = \$194.35$ SALE Price

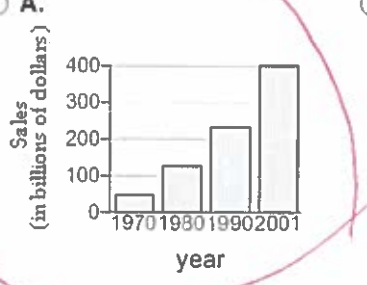
Answers 104.65

194.35

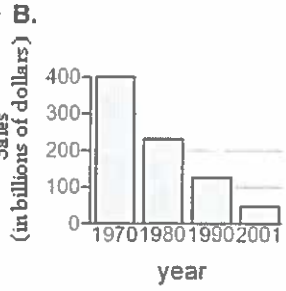
61. Use the information given to draw a vertical bar graph. Choose the correct bar graph below.

Restaurant Industry Annual Food and Beverage Sales	
Year	Sales in Billions of Dollars
1970	47
1980	128
1990	231
2001	398

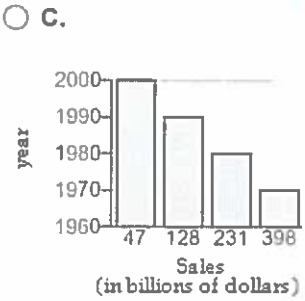
○ A.



○ B.

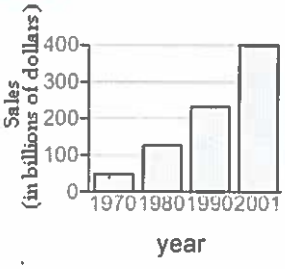


○ C.



Answer:

A.



(1970, 47)

(1980, 128)

(1990, 231)

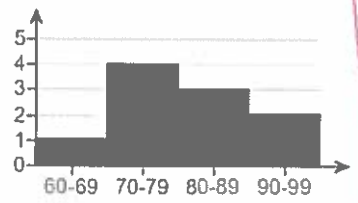
(2001, 398)

62. The frequency distributition of the golf scores for an amateur golfer is shown on the right. Use the frequency distribution to construct a histogram.

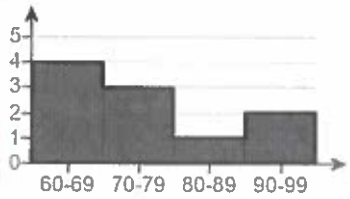
Class Intervals (Scores)	Class Frequency (Number of Games)
60-69	1
70-79	4
80-89	3
90-99	2

Which graph below is the correct histogram?

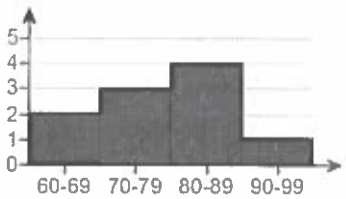
A.



B.

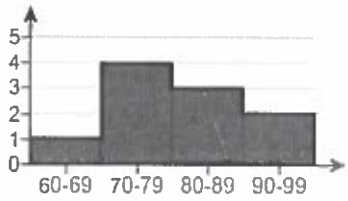


C.

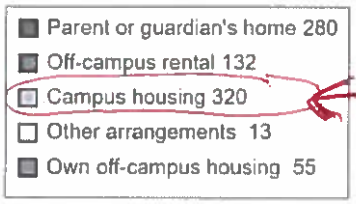


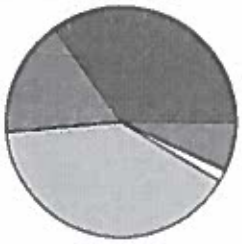
Answer:

A.



63. The circle graph is a result of surveying 800 college students. They were asked where they live while attending college. Use this graph to find where most of these college students live.



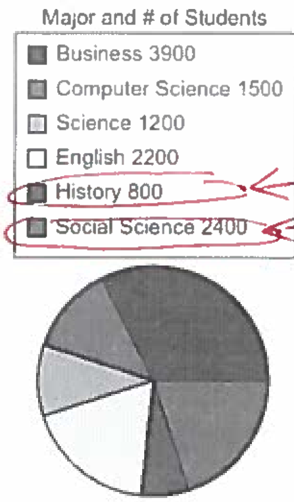


Choose the correct answer below.

A. Campus housing
B. Parent or guardian's home
C. Own off-campus housing
D. Other arrangements
E. Off-campus rental

Answer: A. Campus housing

64. The circle graph shows the number of students at Rockford College who are enrolled in various majors. Find the ratio of History majors to Social Science majors.

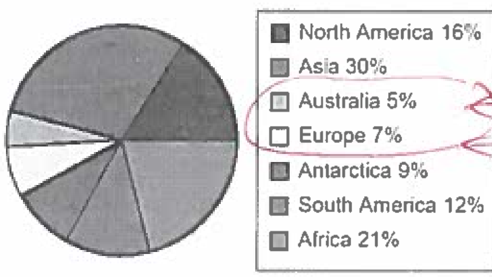


The ratio is ______.
(Type an integer or a simplified fraction.)

Answer: $\frac{1}{3}$

65. The following circle graph shows the relative sizes of the continents of Earth.

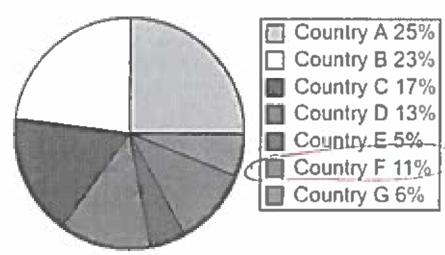
What percent of the land on Earth is accounted for by Europe and Australia together?



______%

Answer: 12

66. The total amount of land of some particular countries is approximately 67,000,000 square miles. Use the graph to find the area of the Country F.

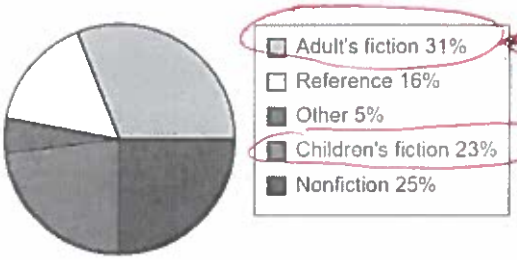


The area of the Country F is approximately ______ square miles.

Answer: 7,370,000

67. The circle graph to the right shows the percent of the types of books available in a library.

What percent of books are classified as some type of fiction?

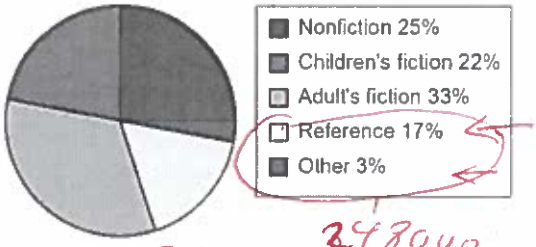


31 %
+23 %
54 %

The percent of books which are classified as some type of fiction is [ ]%.

Answer: 54

68. If this library has 248,000 books, find how many books are in the category of reference or other?



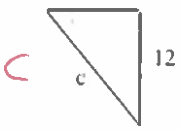
17%
+ 3%
20%

248000
× .20
000000
49600
49600.00

The number of books in the reference or other category is [ ] books.

Answer: 49,600

69. Find the length of the third side of the right triangle.



A
B
C

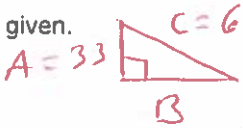
$A^2+B^2=C^2$
$(9)^2+(12)^2=C^2$
$81+144=C^2$
$225=C^2$
$\sqrt{225}=\sqrt{C^2}$
$15=C$

The length of the third side is [ ].

Answer: 15

70. Sketch the right triangle and find the length of the side not given.

leg = 33, hypotenuse = 65

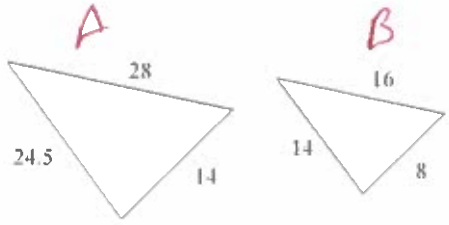


$A^2+B^2=C^2$
$(33)^2+B^2=(65)^2$
$1089+B^2=4225$
$1089+B^2-1089=4225-1089$
$B^2=3136$
$\sqrt{B^2}=\sqrt{3136}$
$B=56$

The unknown length is [ ].
(Type an integer or decimal rounded to the nearest thousandth as needed.)

Answer: 56

71. Find the ratio of the corresponding sides of the given similar triangles.



$\frac{A}{B} =$

$\frac{28}{16} =$

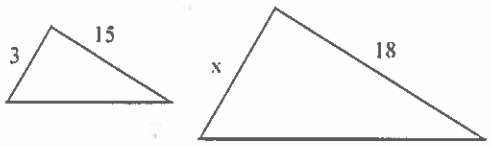
$\frac{4(7)}{4(4)} =$

$\frac{7}{4} =$

The ratio of the corresponding sides of the first triangle to the second triangle is _____.
(Type the ratio as a simplified fraction.)

Answer: $\frac{7}{4}$

72. Given that the pair of triangles are similar, find the unknown length of the side labeled with a variable.



$\frac{3}{x} = \frac{15}{18}$

$3(18) = x(15)$

$54 = 15x$

$\frac{54}{15} = \frac{15x}{15}$

$3.6 = x$

$15\overline{)54.0}$ → $-(45)$ → 90 → $-(90)$ → 0 R

x = _____ (Simplify your answer. Round to the nearest tenth as needed.)

Answer: 3.6

73. Given that the pair of triangles is similar, find the length of the side labeled n.

$\frac{12}{4} = \frac{18}{N}$

$12(N) = 4(18)$

$12N = 72$

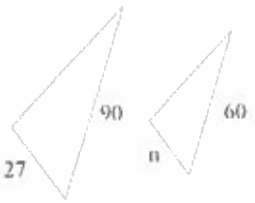
$\frac{12N}{12} = \frac{72}{12}$

$N = 6$

n = _____

Answer: 6

74. Given that the pair of triangles is similar, find the length of the side labeled n.



$\frac{27}{N} = \frac{90}{60}$

$27(60) = 90(N)$

$1620 = 90N$

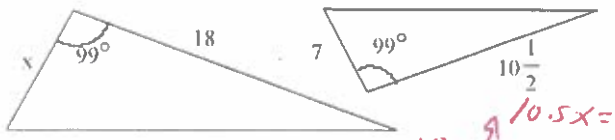
$\frac{1620}{90} = \frac{90N}{90}$

$18 = N$

n = _____

Answer: 18

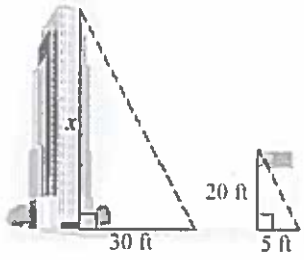
75. Given that the pair of triangles is similar, find the unknown length of the side labeled with a variable.



The unknown length is [ ] unit(s).

Answer: 12

76. A triangle is formed by the building's height and shadow. Another triangle is formed by the flagpole's height and shadow. Using the following diagram, find the height of the building.



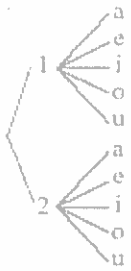
The height of the building is [ ] feet.

Answer: 120

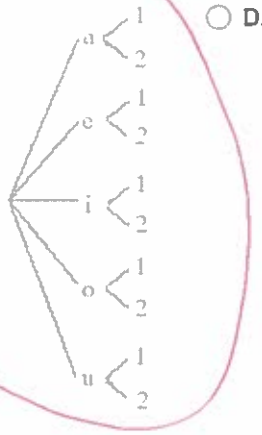
77. Draw a tree diagram for choosing a vowel, (a, e, i, o, u) and then a number (1 or 2). Use the diagram to find the number of possible outcomes.

○ A.

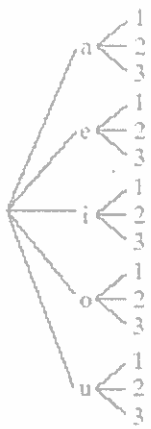
○ B.



○ C.

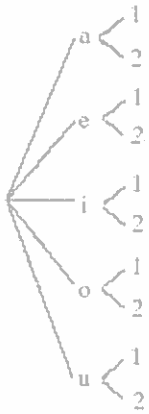


○ D.



Based on the tree, what is the number of possible outcomes? [ ]

Answers



C.

10

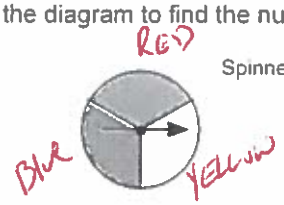
5 · 2 =

10 =

outcomes

78.

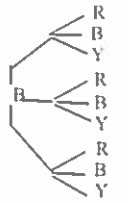
Draw a tree diagram for spinning Spinner A 2 times. Use the diagram to find the number of possible outcomes.



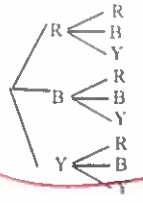
Based on the tree, what is the number of possible outcomes?

Choose the correct tree diagram below.

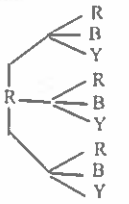
A.



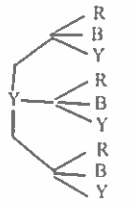
B.



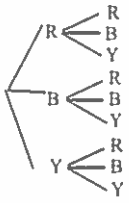
C.



D.



Answers



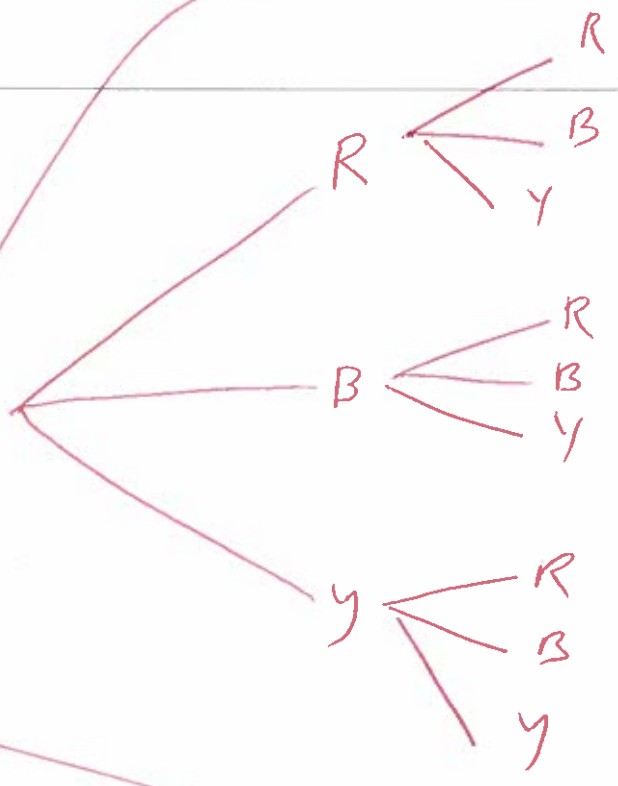
B.

9

(3)(3) =

9 =

Outcomes



79.

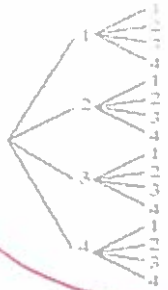
Draw a tree diagram for spinning Spinner B two times. Use the diagram to find the number of possible outcomes.

Based on the tree, what is the number of possible outcomes?

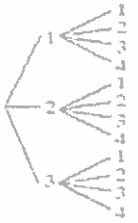
Choose the correct tree diagram below.

A.

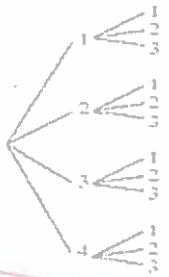
B.



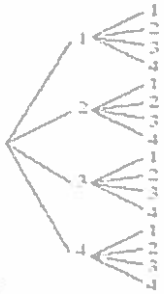
C.



D.



Answers

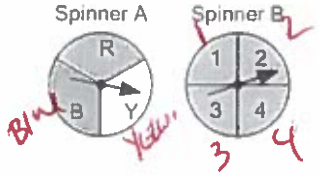


B.

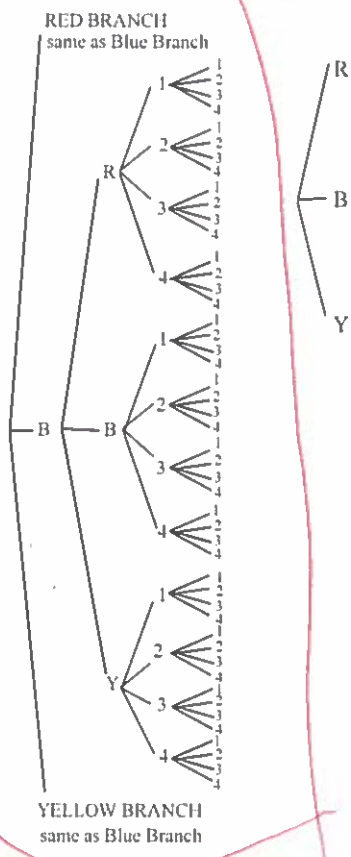
16

(4)(4) = 16 = Outcomes

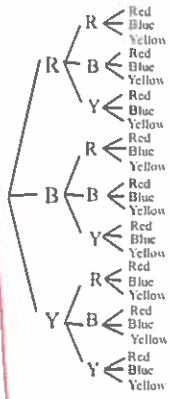
80. Draw a tree diagram for spinning Spinner A two times and then Spinner B two times. Use the diagram to find the number of possible outcomes.



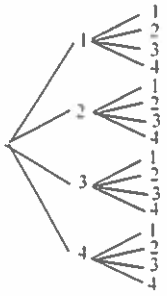
A.



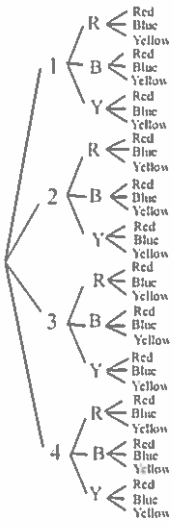
B.



C.

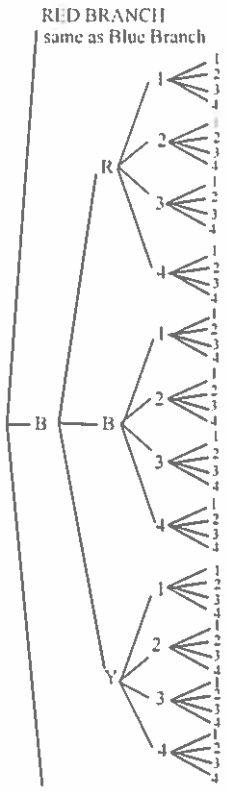


D.



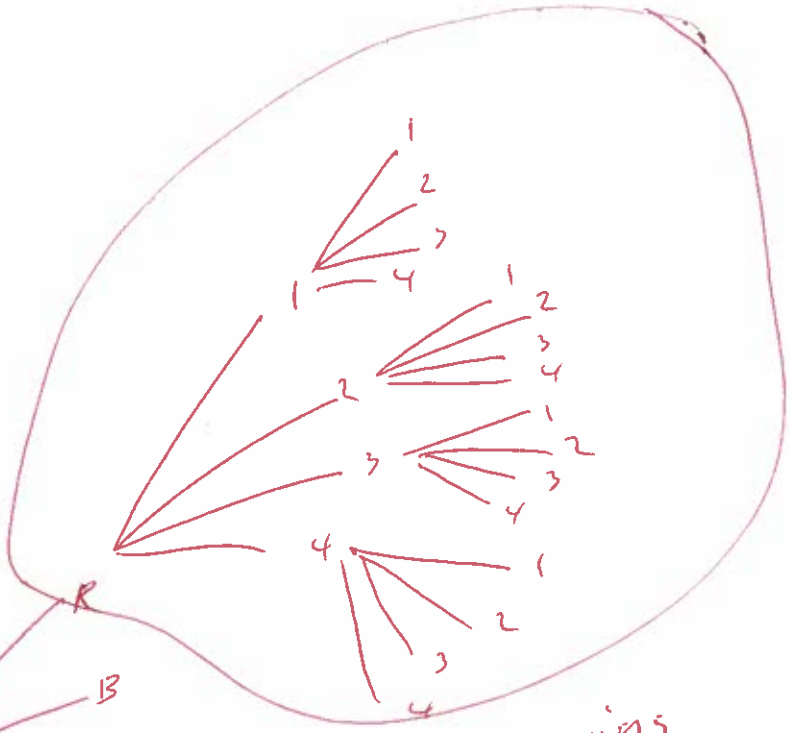
Based on the tree, what is the number of possible outcomes? [ ]

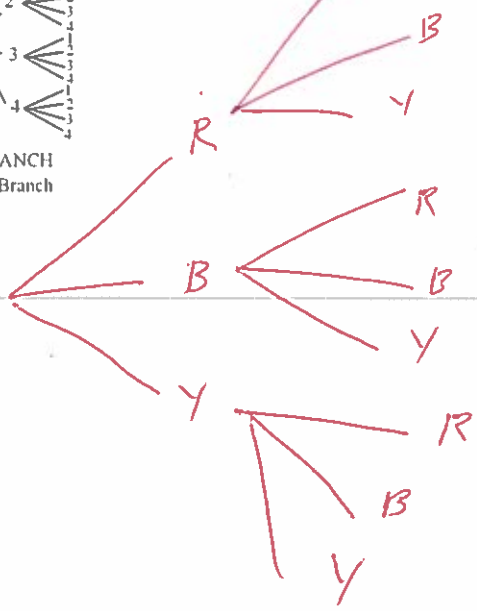
Answers



A.

144



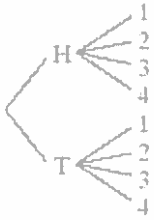


$3 \cdot 3 \cdot 4 \cdot 4 =$

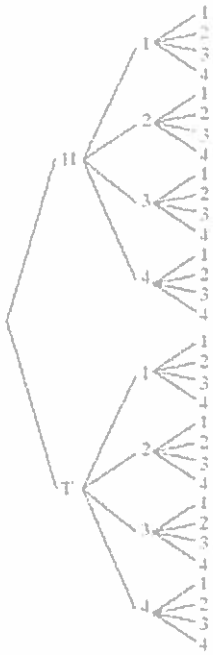
$144 =$

81. Draw a tree diagram for tossing a coin one time and spinning Spinner B one time. Use the diagram to find the number of possible outcomes.

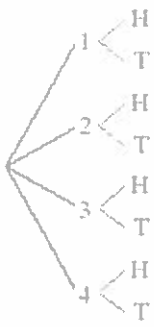
○ A.



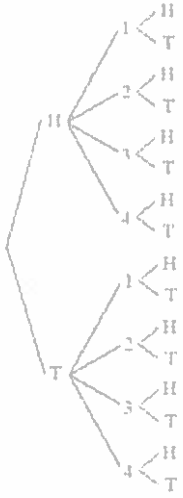
○ B.



○ C.

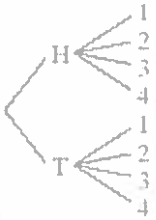


○ D.



Based on the tree, what is the number of possible outcomes? ☐

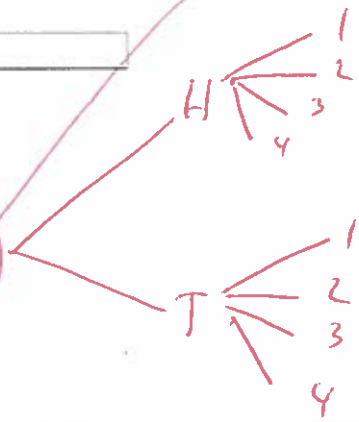
Answers



A.

8

(2)(4) = 8 outcomes



82. If a single 20-sided die is tossed once, find the probability of rolling a 9.

The probability is ☐. (Type an integer or a simplified fraction.)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Answer: $\frac{1}{20}$

$\frac{1}{20}$ =

83. If a single 10-sided die is tossed once, find the probability of rolling a 1 or a 10.

The probability is ____. (Type an integer or a simplified fraction.)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

$\frac{2}{10} =$

$\frac{P(1)}{P(5)} =$

$\frac{1}{5} =$

Answer: $\frac{1}{5}$

84. If a single 20-sided die is tossed once, find the probability of rolling an odd number.

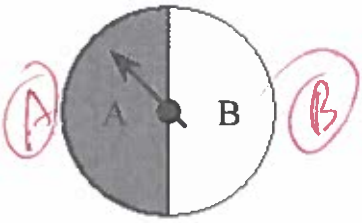
The probability is ____. (Type an integer or a simplified fraction.)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

$\frac{10}{20} = \frac{10(1)}{10(2)} = \frac{1}{2}$

Answer: $\frac{1}{2}$

85. Suppose that the spinner shown is spun once. Find the probability of the event that the result of a spin is A or B.



$\frac{1+1}{2} =$

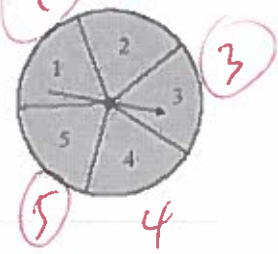
The probability is ____. (Simplify your answer.)

$\frac{2}{2} =$

$1 =$

Answer: 1

86. Suppose the spinner shown is spun once. Find the probability of spinning an odd number.



$\frac{3}{5}$

The probability is ____. (Type an integer or a simplified fraction.)

Answer: $\frac{3}{5}$

87. A marble is selected at random from a jar containing 3 red marbles, 5 yellow marbles, and 2 green marbles.

What is the probability that the marble is red?

The probability that the marble is red is ____. (Type an integer or a simplified fraction.)

Answer: $\frac{3}{10}$

$\frac{\text{red}}{\text{red} + \text{yellow} + \text{green}} =$

$\frac{3}{3+5+2} =$

$\frac{3}{10} =$

88. A new drug is being tested that is supposed to lower blood pressure. This drug was given to 200 people and the results are as follows.

Lower Blood Pressure	Higher Blood Pressure	Blood Pressure Not Changed
84	10	106

If a person is testing this drug, what is the probability that their blood pressure will be higher?

The probability is [ ]. (Type an integer or a simplified fraction.)

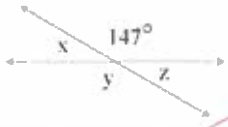
Answer: $\frac{1}{20}$

$\frac{10}{200} = \frac{\text{Higher}}{\text{ALL}}$

$\frac{10(1)}{10(20)} =$

$\frac{1}{20} =$

89. Find the measures of angles x, y, and z in the figure.



The measure of angle x is [ ]°.

The measure of angle y is [ ]°.

The measure of angle z is [ ]°.

Answers 33

147

33

$x + 147 = 180$

$x + 147 - 147 = 180 - 147$

$x = 33$

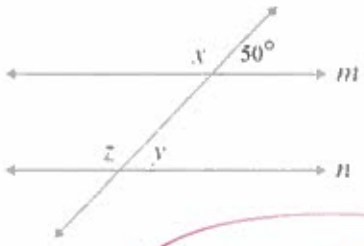
$y = 147$

$x = z$

$33 = z$

$z = 33$

90. Find the measures of angles x, y, and z in the figure. m||n.



$\angle x =$ [ ]°

$\angle z =$ [ ]°

$\angle y =$ [ ]°

Answers 130

130

50

$x + 50 = 180$

$x + 50 - 50 = 180 - 50$

$x = 130$

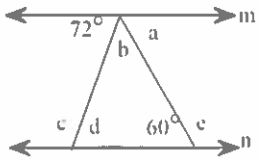
$x = z$

$130 = z$

$z = 130$

$y = 50$

91. If lines m and n are parallel, find the measures of angles a through e.



$60+c=180$
$60+c-60=180-60$
$c=120$

Complete the following table.

m∠a =	°
m∠b =	°
m∠c =	°
m∠d =	°
m∠e =	°

Answers 60
48
108
72
120

$a+c=180$
$a+120=180$
$a+120-120=180-120$
$a=60$

$72+b+a=180$
$72+b+60=180$
$b+132=180$
$b+132-132=180-132$
$b=48$

$d+b+60=180$
$d+48+60=180$
$d+108=180$
$d+108-108=180-108$
$d=72$

$c+d=180$
$c+72=180$
$c+72-72=180-72$
$c=108$

92. Find the perimeter of the following figure.

W
L

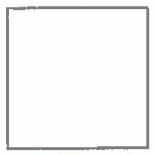
Perimeter = (1)

(1) ○ sq. cm
○ cm

Answers 124
(1) cm

$P=2L+2W$
$P=2(36)+2(26)$
$P=72+52$
$P=124$

93. Find the perimeter of the regular polygon shown to the right.



45
45
45
45
$s = 45$

Perimeter = [ ] (1) [ ]

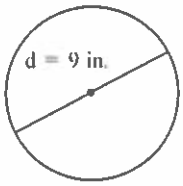
$P = 4s$
$P = 4(45)$
$P = 180$

(1) ○ cm
○ sq cm

Answers 180

(1) cm

94. Find the area of the given geometric figure. If the figure is a circle, give an exact area and then use 3.14 as an approximation for π to approximate the area.



$d = 9$
$r = \frac{1}{2}d$
$r = \frac{1}{2}(9)$
$r = \frac{9}{2}$
$r = 4.5$

The exact area of the circle is [ ] (1) [ ]
(Simplify your answer. Type an exact answer in terms of π.)

The approximate area of the circle is [ ] (2) [ ]
(Simplify your answer. Type an integer or decimal rounded to the nearest thousandth as needed.)

(1) ○ cu in. (2) ○ cu in.
○ in. ○ in.
○ sq in. ○ sq in.

$A = \pi r^2$
$A = \pi(4.5)^2$
$A = \pi(4.5)(4.5)$
$A = \pi(20.25)$
$A = 20.25\pi$

$A = \pi r^2$
$A = 3.14 r^2$
$A = 3.14(4.5)^2$
$A = 3.14(4.5)(4.5)$
$A = 3.14(20.25)$
$A = 63.585$

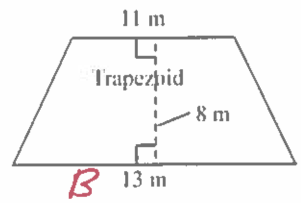
Answers 20.25π

(1) sq in.

63.585

(2) sq in.

95. Find the area of the given geometric figure.



The area of the trapezoid is [ ] (1) [ ]
(Simplify your answer.)

(1) ◯ m.
◯ sq m.
◯ cu m.

Answers 96

(1) sq m.

C = 11, B = 13, H = 8

$A = \frac{1}{2}(B+C)H$

$A = \frac{1}{2}(13+11)(8)$

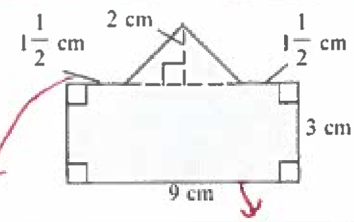
$A = \frac{1}{2}(24)(8)$

$A = \frac{1}{2}(192)$

$A = \frac{192}{2}$

$A = 96$

96. Find the area of the geometric figure.



The area is [ ] (1) [ ]. (Simplify your answer.)

(1) ◯ centimeters
◯ square centimeters
◯ cubic centimeters

Answers 33

(1) square centimeters

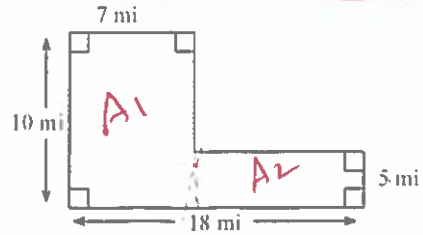
$9 - (1\frac{1}{2} + 1\frac{1}{2}) =$
$9 - (1.5 + 1.5) =$
$9 - (3) =$
$9 - 3 =$
$6 =$ Triangle Base

Triangle
$A_1 = \frac{1}{2}BH$
$A_1 = \frac{1}{2}(6)(2)$
$A_1 = \frac{1}{2}(12)$
$A_1 = \frac{12}{2}$
$A_1 = 6$

rectangle (9 = L, 3 = W)
$A_2 = LW$
$A_2 = (9)(3)$
$A_2 = 27$

add areas
$A_1 + A_2$
$6 + 27 = 33$

97. Find the area of the given geometric figure.



The area of the figure is ____ (1) ____
(Simplify your answer.)

(1) ○ sq mi.
○ cu mi.
○ mi.

$A_1 = LW$
$A_1 = (10)(7)$
$A_1 = 70$

$18 - 7$
11

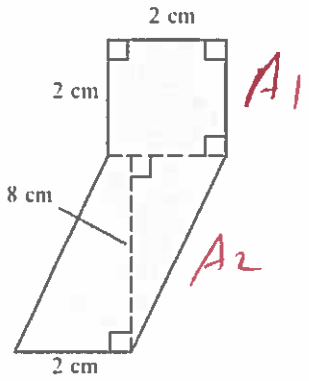
$A_2 = LW$
$A_2 = (11)(5)$
$A_2 = 55$

70 A_1
$+55$ A_2
125

Answers 125

(1) sq mi.

98. Find the area of the geometric figure.



The area is ____ (1) ____.
(Simplify your answer.)

$A_1 = LW$
$A_1 = (2)(2)$
$A_1 = 4$

$A_2 = \frac{1}{2}(B+C)H$
$A_2 = \frac{1}{2}(2+2)(8)$
$A_2 = \frac{1}{2}(4)(8)$
$A_2 = \frac{1}{2}(32)$
$A_2 = \frac{32}{2}$
$A_2 = 16$

A_1 add areas
$+A_2$

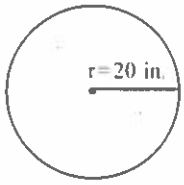
4
$+16$
20

(1) ○ centimeters
○ square centimeters
○ cubic centimeters

Answers 20

(1) square centimeters

99. Find the area of the given geometric figure. If the figure is a circle, give an exact area and then use $\frac{22}{7}$ as an approximation for π to approximate the area.



$A = \pi r^2$
$A = \pi (20)^2$
$A = \pi (20)(20)$
$A = \pi (400)$
$A = 400\pi$

The exact area of the circle is [ ] (1) [ ]
(Simplify your answer. Type an exact answer in terms of π.)

The approximate area is [ ] (2) [ ]
(Simplify your answer. Type an integer, proper fraction, or a mixed number.)

$A = \pi r^2$
$A = \frac{22}{7}(20)^2$
$A = \frac{22}{7}(20)(20)$
$A = \frac{22}{7}(400)$
$A = \frac{22}{7}\left(\frac{400}{1}\right)$
$A = \frac{8800}{7}$
$A = 1257\frac{1}{7}$

(1) ○ cu in. ○ in. ○ sq in.
(2) ○ cu in. ○ sq in. ○ in.

Answers 400π

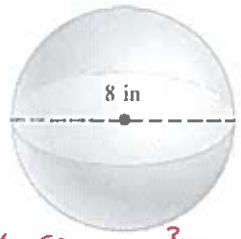
(1) sq in.

$1257\frac{1}{7}$

(2) sq in.

$1257\frac{1}{7}$
$7\overline{)8800}$
$-(7)$
18
$-(14)$
40
$-(35)$
50
$-(49)$
1 rem

100. Find the volume and surface area of the solid. Give an exact answer and then approximate using $\frac{22}{7}$ for π.



$D = 8$
$r = \frac{1}{2}D$
$r = \frac{1}{2}(8)$
$r = \frac{8}{2}$
$r = 4$

$V = \frac{4}{3}\pi r^3$
$V = \frac{4}{3}\pi (4)^3$
$V = \frac{4}{3}\pi (4)(4)(4)$
$V = \frac{4}{3}\pi (64)$
$V = \frac{4\pi}{3}\left(\frac{64}{1}\right)$
$V = \frac{256\pi}{3}$

$V = \frac{4}{3}\left(\frac{22}{7}\right) r^3$
$V = \frac{4}{3}\left(\frac{22}{7}\right)(4)^3$
$V = \frac{4}{3}\left(\frac{22}{7}\right)(4)(4)(4)$
$V = \frac{4}{3}\left(\frac{22}{7}\right)(64)$
$V = \frac{5632}{21}$
$V = 268\frac{4}{21}$

The exact volume is _____ (1) _____.
(Simplify your answer. Type an exact answer in terms of π.)

The approximate volume is _____ (2) _____
(Simplify your answer.)

The exact surface area is _____ (3) _____.
(Simplify your answer. Type an exact answer in terms of π.)

The approximate surface area is _____ (4) _____.
(Simplify your answer.)

(1) ○ inches ○ square inches ○ cubic inches
(2) ○ inches ○ square inches ○ cubic inches
(3) ○ inches ○ square inches ○ cubic inches
(4) ○ inches ○ square inches ○ cubic inches

$268\frac{4}{21}$

$21 \overline{)5632}$
$-(42)$
143
$-(126)$
172
$-(168)$
4 rem

Answers $\frac{256\pi}{3}$

(1) cubic inches

$268\frac{4}{21}$

(2) cubic inches

64π

(3) square inches

$201\frac{1}{7}$

(4) square inches

$S = 4\pi r^2$
$S = 4\pi (4)^2$
$S = 4\pi (4)(4)$
$S = 4\pi (16)$
$S = 64\pi$

$S = 4\left(\frac{22}{7}\right) r^2$
$S = 4\left(\frac{22}{7}\right)(4)^2$
$S = 4\left(\frac{22}{7}\right)(4)(4)$
$S = 4\left(\frac{22}{7}\right)(16)$
$S = \frac{1408}{7}$
$S = 201\frac{1}{7}$

$201\frac{1}{7}$
$7 \overline{)1408}$
(14)
08
$-(7)$
1 rem

101. Find the volume of the solid. Give an exact volume and then approximate using $\frac{22}{7}$ for π.

D = 2 $r = \frac{1}{2}D$

$r = \frac{1}{2}(2) = \frac{2}{2} = 1$

$V = \pi r^2 h$

$V = \pi(1)^2(8)$

$V = \pi(1)(1)(8)$

$V = \pi(1)(8)$

$V = 8\pi$

$V = \frac{22}{7} r^2 h$

$V = \frac{22}{7}(1)^2(8)$

$V = \frac{22}{7}(1)(1)(8)$

$V = \frac{22}{7}(1)(8)$

$V = \frac{22}{7}(8)$

$V = \frac{176}{7}$

$25\frac{1}{7}$

$7\overline{)176}$

$-(14)$

36

$-(35)$

1

$V = 25\frac{1}{7}$

The exact volume is [ ] (1) [ ]. (Simplify your answer. Type an exact answer in terms of π.)

The approximate volume is [ ] (2) [ ]. (Simplify your answer. Type an integer, fraction, or mixed number.)

(1) ○ inches ○ square inches ○ cubic inches

(2) ○ inches ○ square inches ○ cubic inches

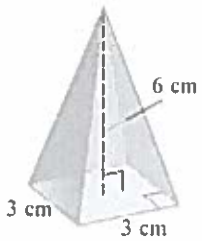
Answers 8π

(1) cubic inches

$25\frac{1}{7}$

(2) cubic inches

102. Find the volume of the solid.



$s = 3$

$h = 6$

$V = \frac{1}{3} s^2 h$

$V = \frac{1}{3}(3)^2(6)$

$V = \frac{1}{3}(3)(3)(6)$

$V = \frac{1}{3}(9)(6)$

$V = \frac{1}{3}(54)$

$V = \frac{54}{3}$

$V = 18$

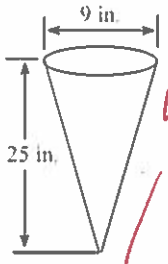
The volume is [ ] (1) [ ]. (Simplify your answer.)

(1) ○ centimeters ○ square centimeters ○ cubic centimeters

Answers 18

(1) cubic centimeters

103. Find the exact volume of a waffle ice cream cone with a 9-in. diameter and a height of 25 inches.



$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi (4.5)^2 (25)$

$D = 9$

$r = \frac{1}{2}D$

$r = \frac{1}{2}(9)$

$r = \frac{9}{2}$

$r = 4.5$

$H = 25$

The exact volume of the waffle ice cream cone is ____ (1) ____

(Type an exact answer in terms of π. Use integers or decimals for any numbers in the expression.)

$V = \frac{1}{3}\pi (4.5)(4.5)(25)$

$V = \frac{1}{3}\pi (20.25)(25)$

$V = \frac{1}{3}\pi (506.25)$

$V = \frac{506.25\pi}{3}$

$V = 168.75\pi$

(1) ○ in.
○ sq in.
○ cu in.

Answers 168.75π

(1) cu in.

104. A computer has shape of a rectangular solid. Find the volume of the computer, with dimensions of 2 inches by 2 inches by 2.9 inches.

$V = LWH$

$V = (2)(2)(2.9)$

$V = 4(2.9)$

$V = 11.6$

The volume of the computer is ____ (1) ____

(Simplify your answer. Type an integer or a decimal.)

(1) ○ cu in.
○ in.
○ sq in.

Answers 11.6

(1) cu in.

105. Find the area of the shaded region. Use the approximation 3.14 for π.

Circle area

$A = \pi r^2$

$A = 3.14(6)^2$

$A = 3.14(6)(6)$

$A = 3.14(36)$

$A = 113.04$

$D = 12$

$r = \frac{1}{2}D$

$r = \frac{1}{2}(12)$

$r = \frac{12}{2}$

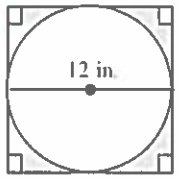
$r = 6$

area square

$A = LW$

$A = (12)(12)$

$A = 144$



The area of the shaded region is approximately ____ (1) ____

(Simplify your answer. Type an integer or a decimal.)

144.00 area square
−113.04 area circle
30.96
shaded area

(1) ○ cu in.
○ in.
○ sq in.

Answers 30.96

(1) sq in.

106. Solve the equation.

$-4y + 8 = -4(2y + 4)$

$-4y+8=-4(2y+4)$
$-4y+8=-8y-16$
$-4y+8-8=-8y-16-8$
$-4y=-8y-24$
$-4y+8y=-8y-24+8y$
$4y=-24$
$\frac{4y}{4}=\frac{-24}{4}$
$y=-6$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. y = _____ (Type an integer or a simplified fraction.)
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. y = −6 (Type an integer or a simplified fraction.)

107. Solve the equation.

$13x - 5 = 1 + 11x$

$13x-5=1+11x$
$13x-5+5=1+11x+5$
$13x=11x+6$
$13x-11x=11x+6-11x$
$2x=6$
$\frac{2x}{2}=\frac{6}{2}$
$x=3$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. x = _____
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. x = 3

108. Solve the equation.

$-2(2x - 4) = 4x$

$-2(2x-4)=4x$
$-4x+8=4x$
$-4x+8-8=4x-8$
$-4x=4x-8$
$-4x-4x=4x-8-4x$
$-8x=-8$
$\frac{-8x}{-8}=\frac{-8}{-8}$
$x=1$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. x = _____ (Simplify your answer.)
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. x = 1 (Simplify your answer.)

109. Solve the equation for x.

$7(x - 6) + 5 = -37$

$7(x-6)+5=-37$
$7x-42+5=-37$
$7x-37=-37$
$7x-37+37=-37+37$
$7x=0$
$\frac{7x}{7}=\frac{0}{7}$
$x=0$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. x = _____ (Simplify your answer. Type an integer or a fraction.)
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. x = 0 (Simplify your answer. Type an integer or a fraction.)

110. Solve the equation.

$11 - 3(a - 1) = 2 + a$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. a = _____ (Simplify your answer. Type an integer or a fraction.)
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. a = 3 (Simplify your answer. Type an integer or a fraction.)

$11-3(a-1)=2+a$
$11-3a+3=2+a$
$-3a+14=2+a$
$-3a+14-14=2+a-14$
$-3a=a-12$
$-3a-a=a-12-a$
$-4a=-12$
$\frac{-4a}{-4}=\frac{-12}{-4}$
$a=3$

111. Solve the equation.

$-4y - 27 = 6y + 13$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. y = _____ (Type an integer or a simplified fraction.)
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. y = −4 (Type an integer or a simplified fraction.)

$-4y-27=6y+13$
$-4y-27+27=6y+13+27$
$-4y=6y+40$
$-4y-6y=6y+40-6y$
$-10y=40$
$\frac{-10y}{-10}=\frac{40}{-10}$
$y=-4$

112. Solve the equation.

$\frac{2}{7}x+\frac{4}{7}=-\frac{4}{7}$

LCD = 7
Mult

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. x = _____
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. x = −4

$\frac{2x}{7}(7)+\frac{4}{7}(7)=-\frac{4}{7}(7)$
$2x(1)+4(1)=-4(1)$
$2x+4=-4$
$2x+4-4=-4-4$
$2x=-8$
$\frac{2x}{2}=\frac{-8}{2}$
$x=-4$

113. Solve the equation for x.

$\frac{3}{10}x - \frac{2}{5} = -1$

$\frac{3}{10}x - \frac{2}{5} = \frac{-1}{1}$

$\frac{3x}{10}(10) - \frac{2}{5}(10) = \frac{-1}{1}(10)$ ← mult by LCD 10

$3x(1) - 2(2) = -1(10)$

$3x - 4 = -10$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. x = _____ (Simplify your answer. Type an integer or a fraction.)
- B. The solution is all real numbers.
- C. There is no solution.

$3x - 4 + 4 = -10 + 4$

$3x = -6$

$\frac{3x}{3} = \frac{-6}{3}$

Answer: A. x = −2 (Simplify your answer. Type an integer or a fraction.)

$x = -2$

114. Solve the equation for x.

$3(4x - 6) = 12x - 18$

$3(4x-6) = 12x - 18$

$12x - 18 = 12x - 18$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

$12x - 18 + 18 = 12x - 18 + 18$

- A. x = _____ (Type an integer or a fraction. Simplify your answer.)
- B. The solution is all real numbers.
- C. There is no solution.

$12x = 12x$

$12x - 12x = 12x - 12x$

$0 = 0$

Answer: B. The solution is all real numbers.

The solution is all real numbers

115. Solve the equation for x.

$7x + 8 = 7(x + 9)$

$7x + 8 = 7x + 63$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

$7x + 8 - 8 = 7x + 63 - 8$

- A. x = _____ (Type an integer or a simplified fraction.)
- B. The solution is all real numbers.
- C. There is no solution.

$7x = 7x + 55$

$7x - 7x = 7x + 55 - 7x$

Answer: C. There is no solution.

$0 \neq 55$ There is no solution

116. Solve.

$0.4x - 2.7 = 0.5$

$0.4x - 2.7 + 2.7 = 0.5 + 2.7$

$0.4x = 3.2$

$0.4x - 2.7 = 0.5$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

$\frac{0.4x}{0.4} = \frac{3.2}{0.4}$

- A. x = _____ (Simplify your answer.)
- B. The solution is all real numbers.
- C. There is no solution.

$x = 8$

Answer: A. x = 8 (Simplify your answer.)

117. Solve the equation.

$8x - 24 = 7x - 24$

$8x-24 = 7x-24$
$8x-24+24 = 7x-24+24$
$8x = 7x$

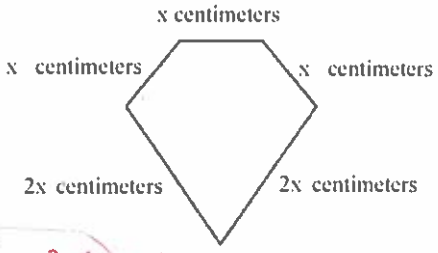
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

$8x-7x = 7x-7x$
$1x = 0$
$x = 0$

- A. x = _____
- B. The solution is all real numbers.
- C. There is no solution.

Answer: A. x = 0

118. The perimeter of a geometric figure is the sum of the lengths of its sides. The perimeter of the pentagon (five-sided figure) on the right is 14 centimeters.



a. Write an equation for perimeter.
b. Solve the equation in part (a).
c. Find the length of each side.

Perimeter

$x + x + x + 2x + 2x = 14$
$1x + 1x + 1x + 2x + 2x = 14$
$7x = 14$
$\frac{7x}{7} = \frac{14}{7}$
$x = 2$

a. Choose the correct answer below.

- A. $4x^5 = 14$
- B. $x + x + x + x + x = 14$
- C. $x + x + x + 2x + 2x = 14$
- D. $x + x + x + 2x + 2x = 7$

b. x = _____ (Simplify your answer.)

c. The shorter sides have a length of _____ (1) _____ (Simplify your answer.)

The longer sides have a length of _____ (2) _____ (Simplify your answer.)

(1) ○ cm. ○ cm^2. (2) ○ cm. ○ cm^2.

Short side = $x = 2$

Long side = $2x = 2(2) = 4$

Answers C. $x + x + x + 2x + 2x = 14$

2

2

(1) cm.

4

(2) cm.

119. A toy ball in the shape of a sphere expands and contracts. When it is completely closed, it has a diameter of 19.5 inches. Find the volume of the sphere when it is completely closed. Use 3.14 for π.

(Hint: the volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.)

$D = 19.5$ $r = \frac{19.5}{2}$ $r = \frac{1}{2}(19.5)$ $r = 9.75$ $V = \frac{4}{3}\pi r^3$

The volume of the sphere is approximately _____ (1) _____
(Round to the nearest whole number as needed.)

$V = \frac{4}{3}(3.14)(9.75^3)$

$V = \frac{4}{3}(3.14)(9.75)(9.75)(9.75)$

$V = \frac{4(3.14)(9.75)(9.75)(9.75)}{3}$

$V = \frac{11641.35375}{3}$

$V = 3880.45125$ round $V = 3880$

(1) ○ sq in.
○ in.
○ cu in.

Answers 3880

(1) cu in.

120. Solve the inequality. Graph the solution set and write it in interval notation.

$3x < -15$

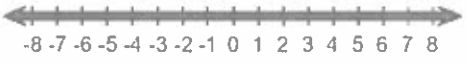
Choose the correct graph below.

○ A. 

○ B. 

○ C. 

○ D. 

○ E. 

○ F. 

The solution to the inequality $3x < -15$ is _____.
(Type your answer in interval notation.)

$3x < -15$

$\frac{3x}{3} < \frac{-15}{3}$

$x < -5$

$(-\infty, -5)$

Answers

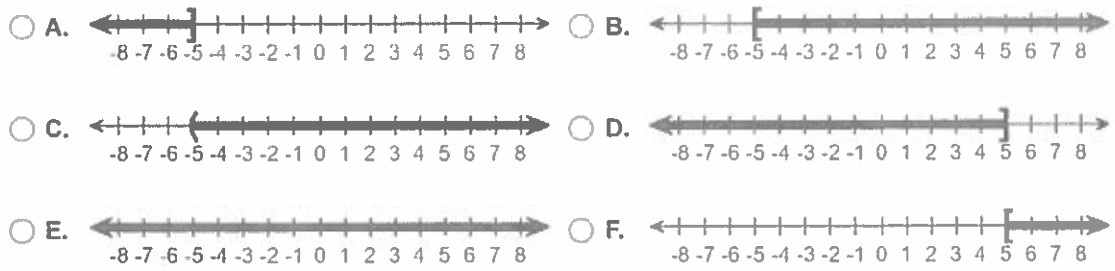
D. 

$(-\infty, -5)$

121. Solve the inequality. Graph the solution set and write it in interval notation.

$-7x \leq 35$

Choose the correct graph below.



The solution to the inequality $-7x \leq 35$ is [ ].
(Type your answer in interval notation.)

$-7x \leq 35$

$\frac{-7x}{-7} \geq \frac{35}{-7}$ divide by negative turn all signs around

$x \geq -5$

$[-5, \infty)$

Answers

B. 

$[-5, \infty)$

122. Solve the inequality. Graph the solution set and write it in interval notation.

$-0.8y < -4.8$

$\frac{-0.8y}{-0.8} > \frac{-4.8}{-0.8}$ (divide by a negative turn all signs around)

$y > 6$

Choose the correct graph below.

The solution set in interval notation is [ ].

$(6, \infty)$

Answers

C. 

$(6, \infty)$

123. Solve the inequality.

$3x - 4 < 5x + 2$

$3x - 4 + 4 < 5x + 2 + 4$

$3x < 5x + 6$

$3x - 5x < 5x + 6 - 5x$

$-2x < 6$

$\frac{-2x}{-2} > \frac{6}{-2}$ divide by negative turn all signs around

$x > -3$

The solution set is [ ]. (Type your answer in interval notation.)

Answer: $(-3, \infty)$

124. Solve the inequality.

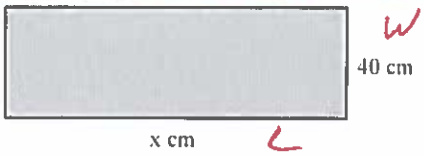
$-8x + 4 \geq 4(4 - x)$

The solution set is [ ]. (Type your answer in interval notation.)

Answer: $(-\infty, -3]$

$-8x + 4 \geq 4(4-x)$
$-8x + 4 \geq 16 - 4x$
$-8x + 4 - 4 \geq 16 - 4x - 4$
$-8x \geq -4x + 12$
$-8x + 4x \geq -4x + 12 + 4x$
$-4x \geq 12$
$\frac{-4x}{-4} \leq \frac{12}{-4}$
$x \leq -3$
$(-\infty, -3]$

125. The perimeter of a rectangle is to be no greater than 180 centimeters and the width must be 40 centimeters. Find the maximum length of the rectangle.



The maximum length of the rectangle is [ ] (1) [ ]
(Type an integer.)

(1) ○ cm.
○ cm^2.
○ cm^3.

Answers 50

(1) cm.

$P = 2L + 2W$
$2L + 2W = P$
$2(x) + 2(40) \leq 180$
$2x + 80 \leq 180$
$2x + 80 - 80 \leq 180 - 80$
$2x \leq 100$
$\frac{2x}{2} \leq \frac{100}{2}$
$x \leq 50$

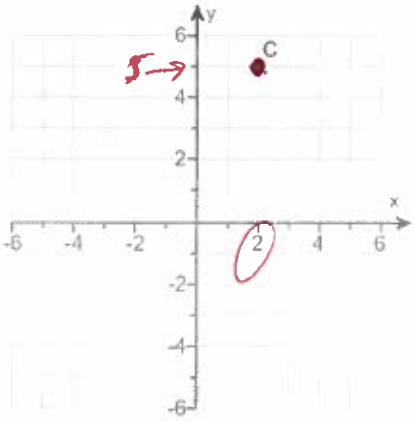
126. Steve and Michelle Neely are celebrating their 30th anniversary by having a reception at a local reception hall. They have budgeted $3,000 for their reception. If the reception hall charges a $100 cleanup fee plus $34 per person, find the greatest number of people that they may invite and still stay within their budget.

Steve and Michelle can invite at most [ ] people to the reception.
(Round down to the nearest whole person.)

Answer: 85

$34x + 100 \leq 3000$
$34x + 100 - 100 \leq 3000 - 100$
$34x \leq 2900$
$\frac{34x}{34} \leq \frac{2900}{34}$
$x \leq 85.2941$
$x \leq 85$ round

127. Find the x- and y-coordinates of the point C.



The coordinates of C are [ ].
(Type an ordered pair.)

(2, 5)
right 2, up 5

Answer: (2,5)

128.

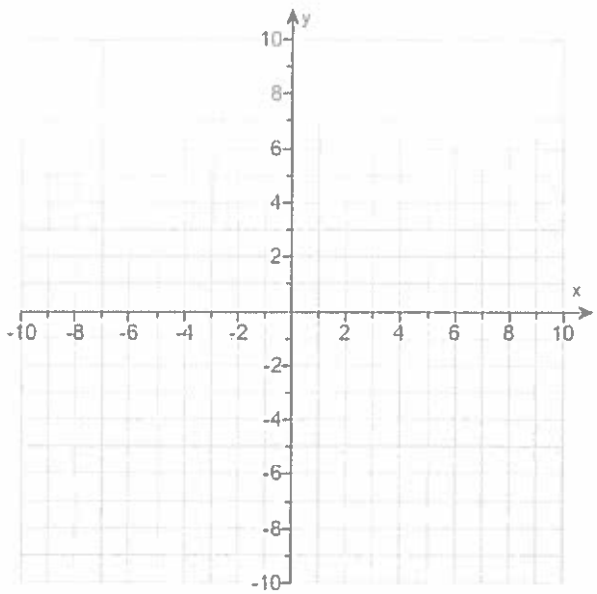
For the equation, find three ordered pair solutions by completing the table. Then use any two of the ordered pairs to graph the equation.

$$y = \frac{1}{2}x$$

Complete the table below.

x	y
0	
−2	
2	

Use the graphing tool to graph the equation.



Answers 0

−1

1

$y = \frac{1}{2}x$

$y = \frac{1}{2}(-2)$

$y = -\frac{1}{2}$

$y = -1$

$y = \frac{1}{2}(0)$

$y = \frac{0}{2}$

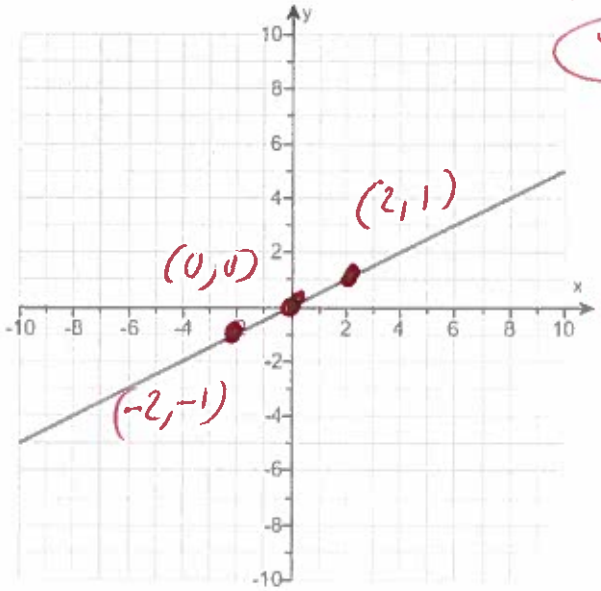
$y = 0$

$y = \frac{1}{2}(2)$

$y = \frac{2}{2}$

$y = 1$

x	y
−2	−1
0	0
2	1



Points

(−2, −1)

(0, 0)

(2, 1)

129.

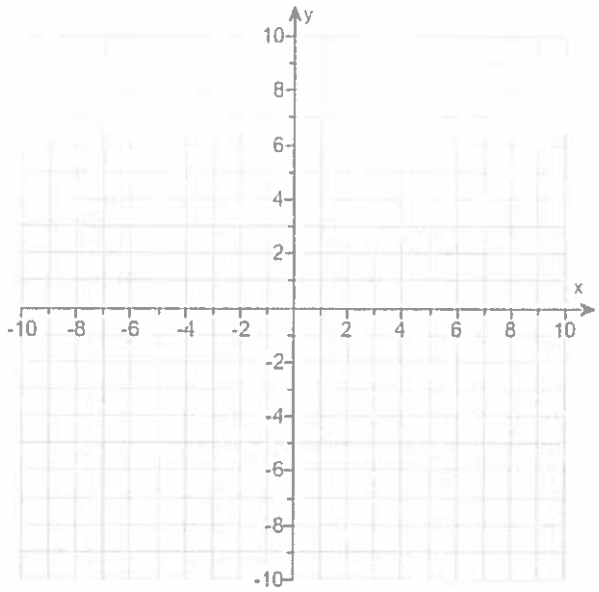
For the following equation, find three ordered pair solutions by completing the table. Then use the ordered pairs to graph the equation.

$y = -2x + 3$

Find three ordered pair solutions of the given equation.

x	y
0	
1	
2	

Use the graphing tool to graph the line.



$y = -2x + 3$

$y = -2(0) + 3$

$y = 0 + 3$

$y = 3$

$y = -2(1) + 3$

$y = -2 + 3$

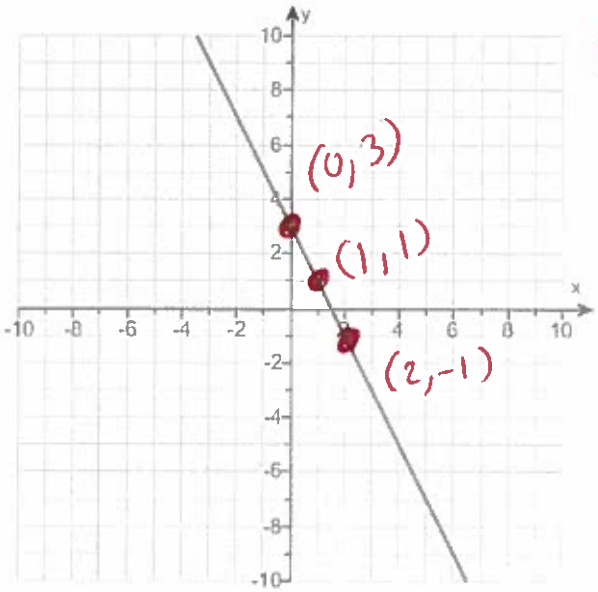
$y = 1$

X	y
0	3
1	1
2	-1

Answers 3

1

− 1



Points

(0, 3)

(1, 1)

(2, -1)

$y = -2(2) + 3$

$y = -4 + 3$

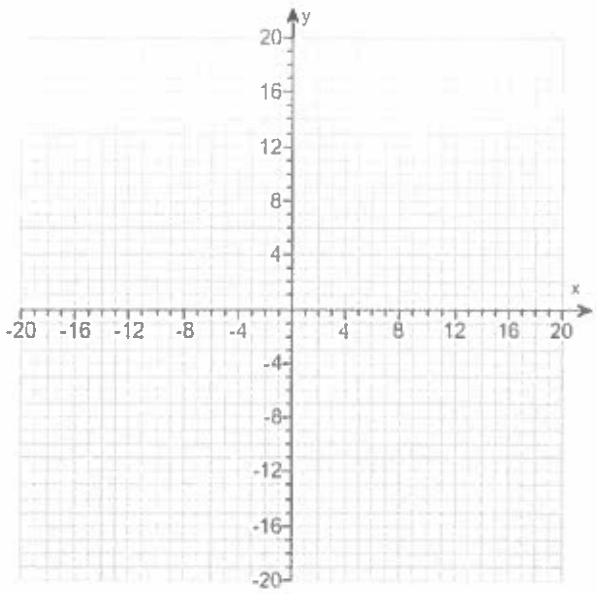
$y = -1$

130.

Graph the equation.

$y = 3x + 5$

Use the graphing tool to graph the line.



$y = 3x + 5$

$y = 3(0) + 5$

$y = 0 + 5$

$y = 5$

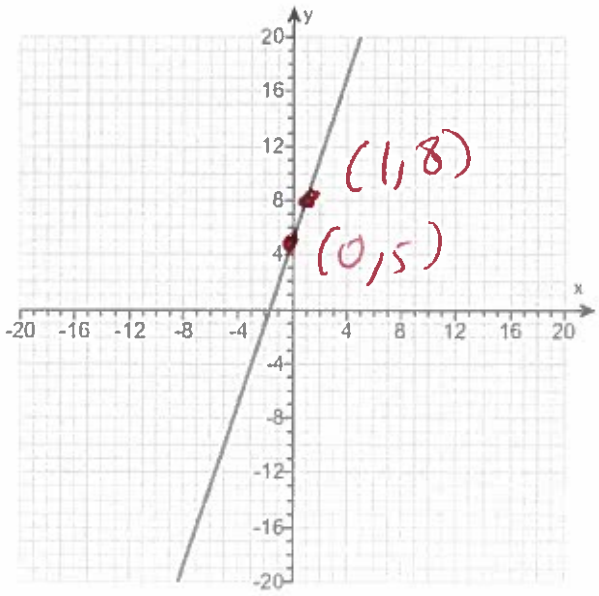
x	y
0	5
1	8

$y = 3(1) + 5$

$y = 3 + 5$

$y = 8$

Answer:



Points

(0, 5)

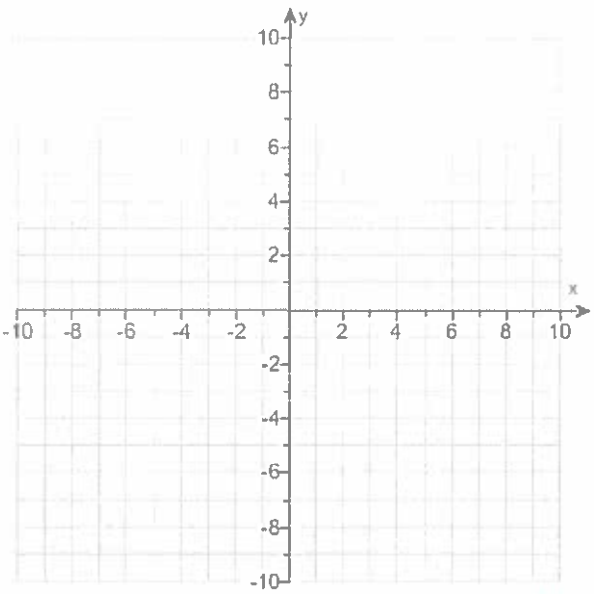
(1, 8)

131.

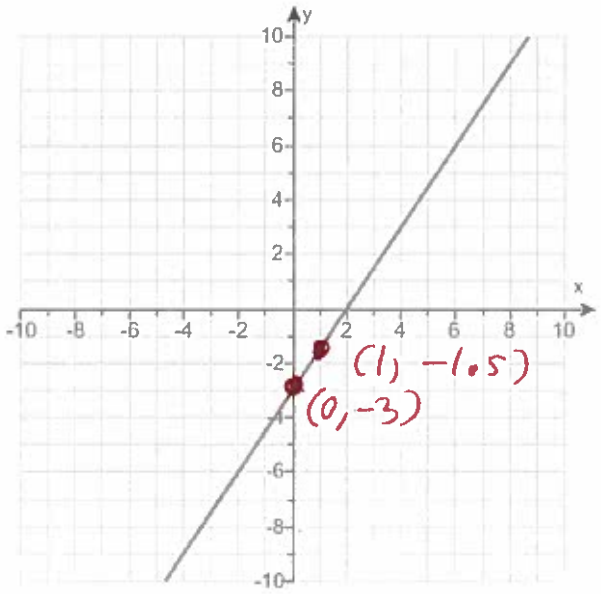
Graph the linear equation.

$y = 1.5x - 3$

Use the graphing tool to graph the equation.



Answer:



$y = 1.5x - 3$

$y = 1.5(0) - 3$

$y = 0 - 3$

$y = -3$

$y = 1.5(1) - 3$

$y = 1.5 - 3$

$y = -1.5$

x	y
0	-3
1	-1.5

132. Write the statement as an equation in two variables. Then graph the equation.

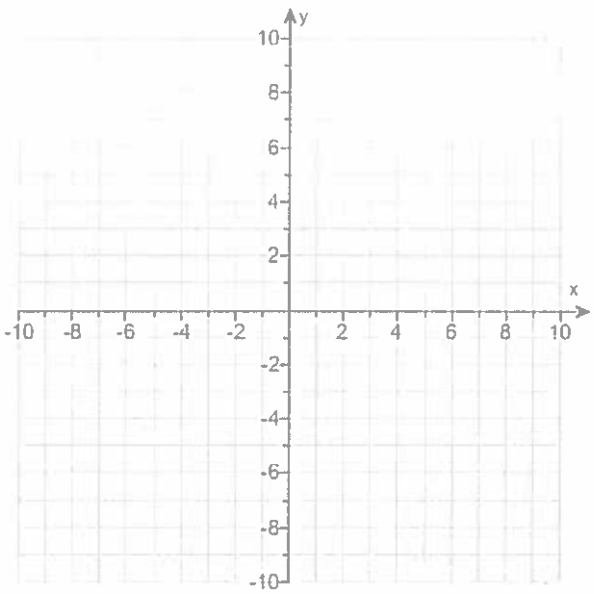
The y-value is 7 less than the x-value.

Write the statement as an equation in two variables.

[ ]

(Type an equation using x and y as the variables.)

Use the graphing tool to graph the equation.



Answers y = x − 7

$y = x - 7$

$y = (0) - 7$

$y = 0 - 7$

$y = -7$

x	y
0	-7
1	-6

$y = (1) - 7$

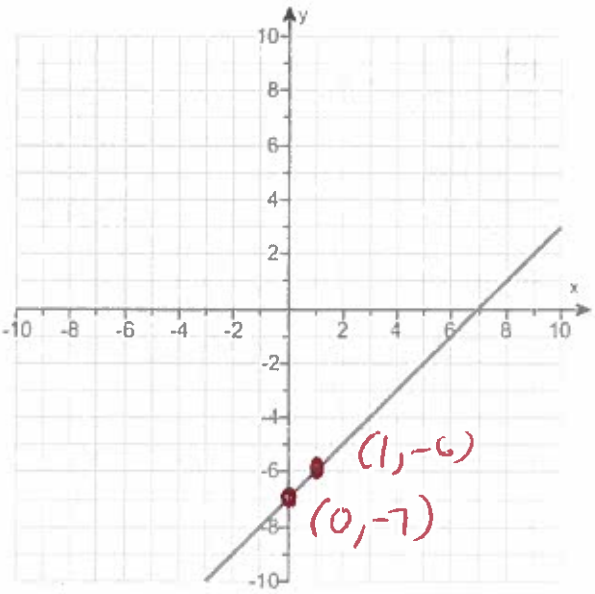
$y = 1 - 7$

$y = -6$

Points

(0, −7)

(1, −6)



133. Find the slope of the line that goes through the given points.

(−8, 2) and (−6, 10)

$m = \frac{y_1 - y_2}{x_1 - x_2}$

$x_1\ y_1 \quad x_2\ y_2$

$m = \frac{(2) - (10)}{(-8) - (-6)}$

$m = \frac{2 - 10}{-8 + 6}$

$m = \frac{-8}{-2}$

$m = 4$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The slope is _____. (Type an integer or a simplified fraction.)
- B. The slope is undefined.

Answer: A. The slope is [4]. (Type an integer or a simplified fraction.)

134. Find the slope-intercept equation of the line that has the given characteristics.

Slope − 3 and y-intercept (0,8)

m x_1 y_1

The equation is _____.

(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

Answer: y = − 3x + 8

$y - y_1 = m(x - x_1)$

$y - (8) = -3(x - (0))$

$y - 8 = -3(x - 0)$

$y - 8 = -3(x)$

$y - 8 = -3x$

$y - 8 + 8 = -3x + 8$

$y = -3x + 8$

135. Given the following function, find f(− 3), f(0), and f(2).

f(x) = 5x − 4

f(− 3) = _____

f(0) = _____

f(2) = _____

Answers − 19

− 4

6

$f(-3) = 5(-3) - 4$

$f(-3) = -15 - 4$

$f(-3) = -19$

$f(0) = 5(0) - 4$

$f(0) = 0 - 4$

$f(0) = -4$

$f(2) = 5(2) - 4$

$f(2) = 10 - 4$

$f(2) = 6$

136. Given the following function, find f(− 5), f(0), and f(1).

$f(x) = x^2 - 2$

f(− 5) = _____

f(0) = _____

f(1) = _____

Answers 23

− 2

− 1

$f(-5) = (-5)^2 - 2$

$f(-5) = (-5)(-5) - 2$

$f(-5) = (25) - 2$

$f(-5) = 25 - 2$

$f(-5) = 23$

$f(0) = (0)^2 - 2$

$f(0) = (0)(0) - 2$

$f(0) = (0) - 2$

$f(0) = 0 - 2$

$f(0) = -2$

$f(1) = (1)^2 - 2$

$f(1) = (1)(1) - 2$

$f(1) = (1) - 2$

$f(1) = 1 - 2$

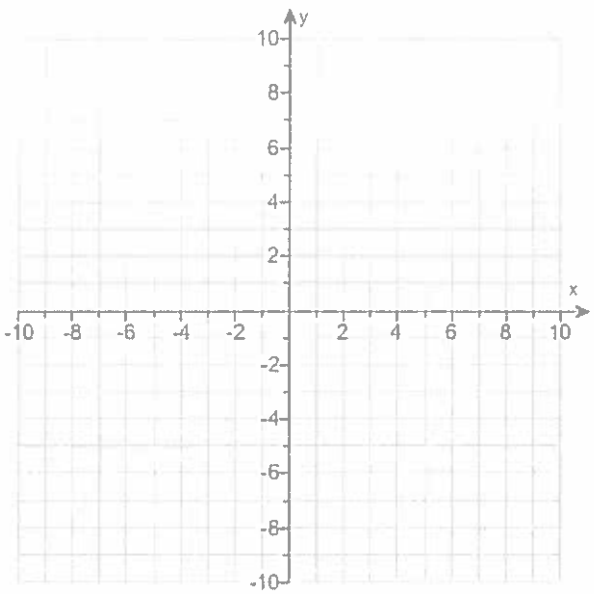
$f(1) = -1$

137.

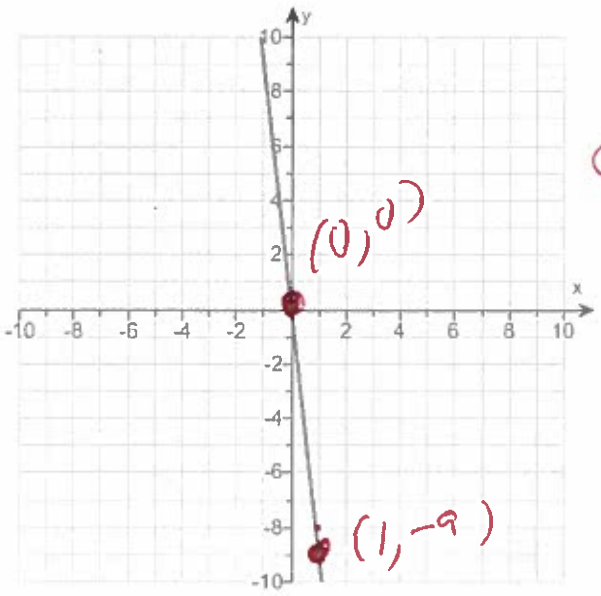
Graph the linear equation.

$f(x) = -9x$

Use the graphing tool to graph the equation.



Answer:



$f(x) = -9x$

$f(0) = -9(0)$

$f(0) = 0$

$f(1) = -9(1)$

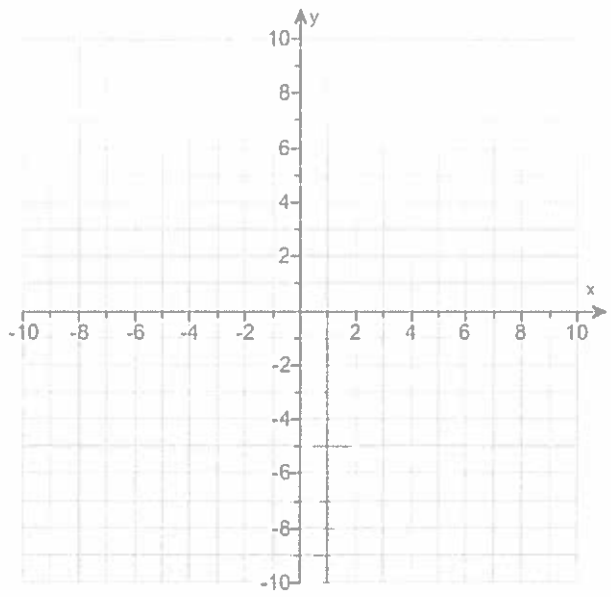
$f(1) = -9$

x	f(x)
0	0
1	-9

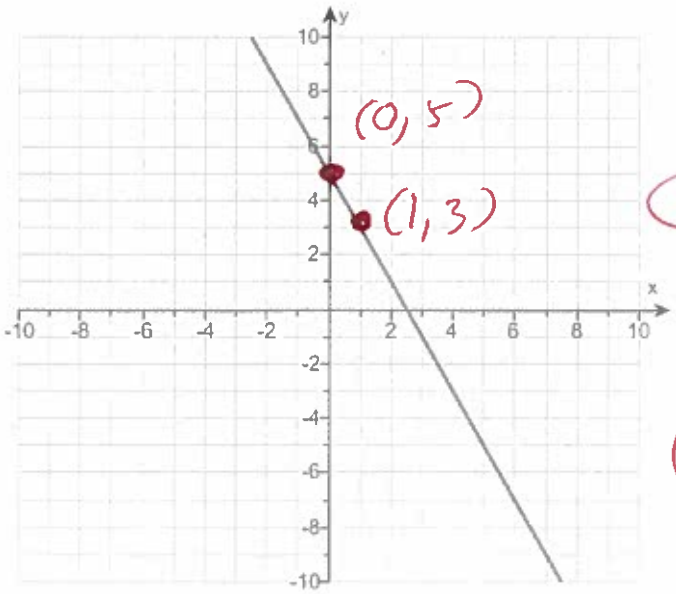
138. Graph the linear equation.

$f(x) = -2x + 5$

Use the graphing tool to graph the linear equation.



Answer:



$f(x) = -2x + 5$

$f(0) = -2(0) + 5$

$f(0) = 0 + 5$

$f(0) = 5$

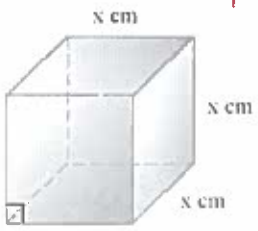
x	f(x)
0	5
1	3

$f(1) = -2(1) + 5$

$f(1) = -2 + 5$

$f(1) = 3$

139. The function $V(x) = x^3$ may be used to find the volume of a cube with side length x. Find the volume of a cube whose side is 11 centimeters.



$V(x) = x^3$ $V(11) = (11)^3$

$V(11) = (11)(11)(11)$

$V(11) = (121)(11)$

$V(11) = 1331$

The volume is [ ] cubic centimeters. (Type an integer or a decimal.)

Answer: 1331

$11 \times 11 = 121$ $121 \times 11 = 1331$

140. If y varies directly as x, find the constant of variation k and the direct variation equation for the situation.

y = 9 when x = 36

$y = kx$ $9 = k(36)$ $9 = 36k$ $\frac{9}{36} = \frac{36k}{36}$ $\frac{9}{36} = k$

Find the constant of variation k.

k = [ ] (Type an integer or a fraction. Simplify your answer.)

Complete the direct variation equation given y = 9 when x = 36.

y = [ ] (Use integers or fractions for any numbers in the expression.)

$y = kx$ $y = \frac{1}{4}x$ $\frac{9(1)}{9(4)} = k$ $\frac{1}{4} = k$

Answers $\frac{1}{4}$

$\frac{1}{4}x$

141. If y varies directly as x, find the constant of variation k and the direct variation equation for the situation.

y = 0.6 when x = 1.2 $y = kx$ $0.6 = k(1.2)$ $0.6 = 1.2k$ $\frac{0.6}{1.2} = \frac{1.2k}{1.2}$ $0.5 = k$

Find the constant of variation k.

k = [ ] (Round to one decimal place.)

Write the direct variation equation. $y = kx$ $y = 0.5x$

[ ]

Answers 0.5

y = 0.5x

142. The weight of a synthetic ball varies directly with the cube of its radius. A ball with a radius of 2 inches weighs 4.40 pounds. Find the weight of a ball of the same material with a 3-inch radius.

$y = kr^3$ $4.40 = k(2)^3$ $4.40 = k(2)(2)(2)$ $4.40 = k(4)(2)$ $4.40 = k(8)$ $4.40 = 8k$ $\frac{4.40}{8} = \frac{8k}{8}$ $.55 = k$

The weight of a ball of the same material with a 3-inch radius is [ ] lb.

(Type an integer or a decimal.)

$y = kr^3$ $y = .55r^3$ $y = (.55)(3)^3$ $y = .55(3)(3)(3)$ $y = .55(9)(3)$ $y = .55(27)$ $y = 14.85$

Answer: 14.85

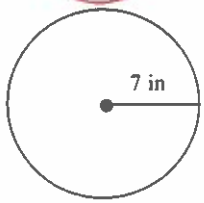
143. The amount P of pollution varies directly with the population N of people. City A has a population of 442,000 and produces 260,000 tons of pollutants. Find how many tons of pollution we should expect City B to produce, if we know that its population is 350,000.

City B produces ____ tons of pollution.
(Do not round until the final answer. Then round to the nearest ton as needed.)

Answer: 205,882

$y = kx$ $260{,}000 = k(442000)$
$260{,}000 = 442000k$
$\frac{260{,}000}{442000} = \frac{442000k}{442000}$
$.588235 = k$
$y = .588235x$
$y = .588235(350000)$
$y = 205882.25$ round

144. Find the exact circumference and area of the circle.



$r = 7$
$C = 2\pi r$
$C = 2\pi(7)$
$C = 14\pi$ Exact

The exact circumference is ____ in.
(Simplify your answer. Type an exact answer, using π as needed.)

The exact area is ____ sq in.
(Simplify your answer. Type an exact answer, using π as needed.)

Answers 14π

49π

$A = \pi r^2$
$A = \pi(7)^2$
$A = \pi(7)(7)$
$A = \pi(49)$
$A = 49\pi$ Exact

EXACT ONLY

145.

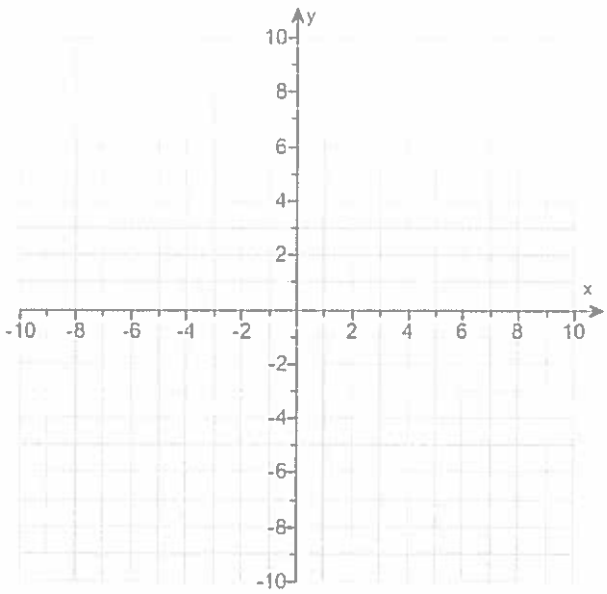
Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.

$F(x) = x^2 - 4$

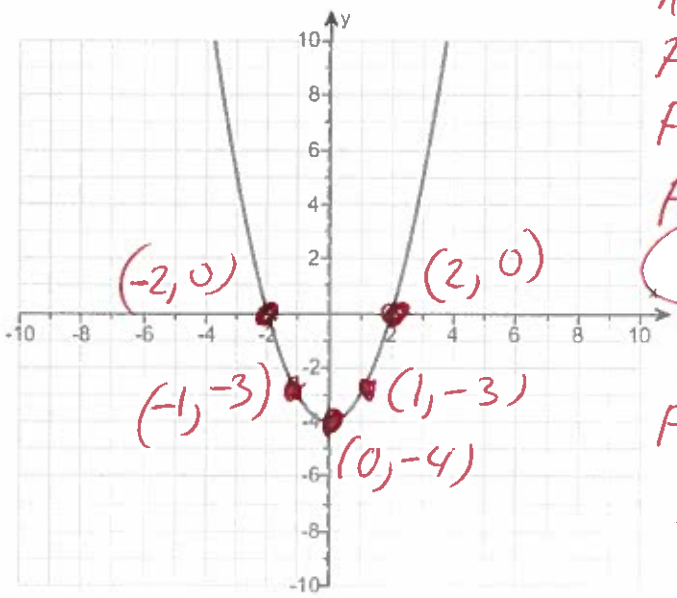
Use the graphing tool to graph the function as a solid curve and the axis of symmetry as a dashed line.

The vertex is [ ].
(Type an ordered pair.)

The axis of symmetry is [ ].
(Type an equation.)



Answers



$F(x) = x^2 - 4$

$F(-2) = (-2)^2 - 4$

$F(-2) = (-2)(-2) - 4$

$F(-2) = 4 - 4$

$F(-2) = 0$

$F(-1) = (-1)^2 - 4$

$F(-1) = (-1)(-1) - 4$

$F(-1) = 1 - 4$

$F(-1) = -3$

x	f(x)
-2	0
-1	-3
0	-4
1	-3
2	0

(0, − 4)

x = 0

$F(0) = (0)^2 - 4$

$F(0) = (0)(0) - 4$

$F(0) = 0 - 4$

$F(0) = -4$

$F(1) = (1)^2 - 4$

$F(1) = (1)(1) - 4$

$F(1) = 1 - 4$

$F(1) = -3$

$F(2) = (2)^2 - 4$

$F(2) = (2)(2) - 4$

$F(2) = 4 - 4$

$F(2) = 0$