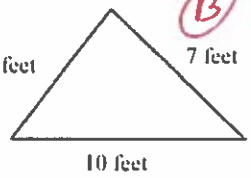
04-05-19
05-11-19

Student: _____	**Instructor:** Alfredo Alvarez	**Assignment:**
Date: _____	**Course:** Math 0410 / 0320 Alvarez	MATH5N3579THSANFIESTA150PMR

1. Find the perimeter of the figure.



(A) (B) (C)

P = A+B+C
P = 4+7+10
P = 11+10
P = 21

The perimeter is [ ] feet.

Answer: 21

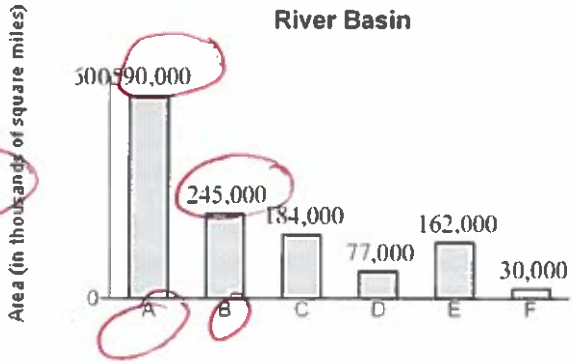
2. A new notebook computer with DVD player costs $624. Derik Muller has $1251 in his checking account. How much will be left in his checking account after he buys the notebook computer?

Derik will have $[ ] remaining in his checking account after he buys the notebook computer.

1251
- 624
627

Answer: 627

3. How many more square miles of land is drained by the A sub-basin than the B sub-basin?

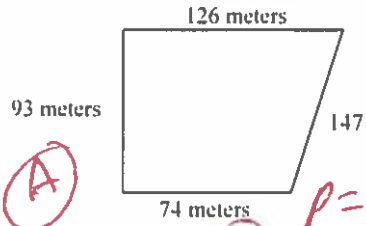


590000
- 245000
345,000

[ ] sq mi

Answer: 345,000

4. Alexander is installing a pen for his dog. The pen will have the shape and dimensions of the figure shown to the right. How many meters of fencing are needed to enclose the the area shown?



(A) (B) (C) (D)

P = A+B+C+D
P = 93+126+147+74
P = 219+147+74
P = 366+74
P = 440

[ ] m

Answer: 440

5. Evelyn Abrams is reading a 271-page book. If she has just finished reading page 135, how many more pages must she read to finish the book?

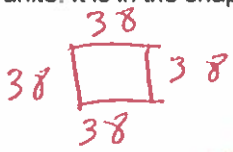
[ ] pages

271
-135
136

Answer: 136

6. A permanent game board is made of granite. It is in the shape of a square with side lengths of 38 ft. Find the perimeter of the square playing board.

The perimeter is [ ] feet.



$P = 4N$
$P = 4(38)$
$P = 152$

$N = 38$

Answer: 152

7. The table on the right shows the number of a particular store in ten states. What is the total number of stores located in the three states with the most stores?

A total of [ ] stores are located in the three states with the most stores.

State	Number of Stores
Arizona	147
California	35
Florida	80
Georgia	26
Illinois	21
New York	77
Michigan	45
Minnesota	25
Ohio	182
Texas	72

147
80
182
409

Answer: 409

8. Round 8,467 to the nearest hundred.

The number 8,467 rounded to the nearest hundred is [ ].

8467 = since 6 > 5 round up

8500

Answer: 8,500

9. Bargain Appliance Store advertises three washing machines on sale at $1099, $699, and $1699. Round each cost to the nearest hundred to estimate the total cost.

The estimated total cost is $[ ].

1099 → 1100
699 → 700
1699 → 1700
3500

round first

Answer: 3500

10. Use the distributive property to rewrite each expression.

3(6 + 8)

3(6 + 8) = _____

(Type an expression. Do not simplify.)

Answer: 3 • 6 + 3 • 8

$3(6+8) =$

$3 \cdot 6 + 3 \cdot 8 =$

11. 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) _____

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

Answers 45

(1) square meters.

28

(2) meters.

$A = LW$

$A = (9)(5)$

$A = 45$

$P = 2L + 2W$

$P = 2(9) + 2(5)$

$P = 18 + 10$

$P = 28$

12. One triple fudge brownie contains 119 calories. How many calories are in 12 triple fudge brownies?

_____ calories

Answer: 1428

$\frac{1}{119} = \frac{12}{N}$

$1(N) = 119(12)$ Cross mult

$N = 1428$

13. A plot of land measures 80 feet by 160 feet. Find its area.

W L

The area of the rectangle is _____ (1) _____

(1) ○ cubic feet.
○ feet.
○ square feet.

Answers 12,800

(1) square feet.

$A = LW$

$A = (160)(80)$

$A = 12800$

14. A plant for a tea company has bagging machines capable of bagging 2000 bags of tea per minute. If the plant runs 23 hours a day, how many tea bags are produced in one day?

The company produces [ ] tea bags in one day of operation.

$A = (2000)(23 \text{ hours})$
$A = 2000(23)(60)$
$A = 2{,}760{,}000$

Answer: 2,760,000

15. Divide the following and then check by multiplying.

$5\overline{)235}$

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

- A. The quotient does not have a remainder. The quotient is _____.
- B. The quotient has a remainder not equal to 0. The quotient is _____ R _____.
- C. The quotient is undefined.

47
5|235
−(20)
35
−(35)
0 rem

Answer: A. The quotient does not have a remainder. The quotient is 47.

16. Divide the following and then check by multiplying.

$6\overline{)1493}$

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

- A. The quotient does not have a remainder. The quotient is _____.
- B. The quotient has a remainder not equal to 0. The quotient is _____ R _____.
- C. The quotient is undefined.

$248\frac{5}{6}$
6|1493
−(12)
29
−(24)
53
−(48)
5 rem

Answer: B. The quotient has a remainder not equal to 0. The quotient is 248 R 5.

17. For their wedding, Ben and Jen paid $14 for each guest's dinner. The total bill ~~was $2352~~. How many guests did they have at their wedding?

[ ] guests

168
14|2352
−(14)
95
−84
112
−(112)

Answer: 168

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

20, 24, 41, 21, 14, 12 → 12, 14, 20, 21, 24, 41 =

The average value is [ ].

$\frac{12+14+20+21+24+41}{6} = \frac{132}{6} = 22$

Answer: 22

19. Find the value of the expression.

5^2

$5^2 =$ _____

Answer: 25

$5^2 =$
$5 \cdot 5 =$
$25 =$

20. Simplify.

$19 + 7 \cdot 2$

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

A. $19 + 7 \cdot 2 =$ _____

B. The expression is undefined.

Answer: A. $19 + 7 \cdot 2 =$ 33

PEMDAS

$19 + 7 \cdot 2 =$
$19 + 14 =$
$33 =$

$19 + 14 = 33$

21. Simplify.

$26 + \frac{63}{9}$

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

A. $26 + \frac{63}{9} =$ _____

B. The expression is undefined.

Answer: A. $26 + \frac{63}{9} =$ 33

PEMDAS

$26 + \frac{63}{9} =$
$26 + 7 =$
$33 =$

22. Simplify.

$3 \cdot 6 + 3 \cdot 3$

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

A. $3 \cdot 6 + 3 \cdot 3 =$ _____

B. The expression is undefined.

Answer: A. $3 \cdot 6 + 3 \cdot 3 =$ 27

PEMDAS

$3 \cdot 6 + 3 \cdot 3 =$
$18 + 3 \cdot 3 =$
$18 + 9 =$
$27 =$

23. Simplify.

$(2 + 5) \cdot (7 - 2)$

PEMDAS

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

$(2+5)\cdot(7-2) =$
$(7)\cdot(5) =$
$7 \cdot 5 =$
35

- A. $(2 + 5) \cdot (7 - 2) =$ _____
- B. The expression is undefined.

Answer: A. $(2 + 5) \cdot (7 - 2) =$ 35

24. Evaluate the expression for $x = 3$ and $z = 4$.

$3xz - 4x$

PEMDAS

$3 \times y - 4x =$
$3(3)(4) - 4(3) =$
$3(12) - 4(3) =$
$36 - 12 =$
24 =

Subst
36
−12
24

$3xz - 4x =$ _____

Answer: 24

25. Evaluate the algebraic expression for the given value.

$x^2 - 3x + 2$, for $x = 6$

PEMDAS

$x^2 - 3x + 2 =$
$(6)^2 - 3(6) + 2 =$
$(6)(6) - 3(6) + 2 =$
$36 - 18 + 2 =$
$18 + 2 =$
20

When $x = 6$, $x^2 - 3x + 2 =$ _____. (Simplify your answer.)

Answer: 20

26. Determine which numbers in the set are solutions of the equation.

$n - 6 = 11$; {15, 17, 19}

n = 17

$n - 6 = 11$
$(17) - 6 = 11$
$17 - 6 = 11$
$11 = 11$
Good

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

- A. _____ in the set {15, 17, 19} is a solution of the equation $n - 6 = 11$.
- B. None of the numbers in the set are solutions of the equation

Answer: A. 17 in the set {15, 17, 19} is a solution of the equation $n - 6 = 11$.

27. Determine which numbers in the set are solutions of the equation.

n = 3

$5n = 15$
$5(3) = 15$
$15 = 15$
Good

$5n = 15$; {3, 9, 15}

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

- A. _____ in the set {3, 9, 15} is a solution of the equation $5n = 15$.
- B. None of the numbers in the set are solutions of the equation.

Answer: A. 3 in the set {3, 9, 15} is a solution of the equation $5n = 15$.

28. Determine which numbers in the set are solutions of the equation.

$4n + 5 = 37$; {0, 6, 8}

$n = 8$

$4n + 5 = 37$
$4(8) + 5 = 37$
$32 + 5 = 37$
$37 = 37$
Good

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

○ A. _____ in the set {0, 6, 8} is a solution of the equation $4n + 5 = 37$.

○ B. None of the numbers in the set are solutions of the equation.

Answer: A. 8 in the set {0, 6, 8} is a solution of the equation $4n + 5 = 37$.

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29. Simplify.

$3 + 8 \cdot 9 - 14$

$3 + 8 \cdot 9 - 14 =$ _____

PEMDAS

$3 + 8 \cdot 9 - 14 =$
$3 + 72 - 14 =$
$75 - 14 =$

75
−14
61

$61 =$

Answer: 61

---

30. Solve. Check your solution.

$x + 6 = 25$

The solution is $x =$ _____.

$x + 6 = 25$
$x + 6 - 6 = 25 - 6$
$x = 19$

Check
$x + 6 = 25$
$(19) + 6 = 25$
$19 + 6 = 25$
$25 = 25$ Good

Answer: 19

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31. Solve. Check your solution.

$17 = y - 1$

The solution is $y =$ _____.

$17 = y - 1$
$17 + 1 = y - 1 + 1$
$18 = y$

Check
$17 = y - 1$
$17 = (18) - 1$
$17 = 18 - 1$
$17 = 17$ Good

Answer: 18

---

32. Solve.

$9x = 45$

The solution is $x =$ _____.

$9x = 45$
$\frac{9x}{9} = \frac{45}{9}$
$x = 5$

Check
$9x = 45$
$9(5) = 45$
$45 = 45$ Good

Answer: 5

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

$x - 3 = -2 + 7$

The solution is $x =$ _____.

$x - 3 = -2 + 7$
$x - 3 = 5$
$x - 3 + 3 = 5 + 3$
$x = 8$

Check
$x - 3 = -2 + 7$
$(8) - 3 = -2 + 7$
$8 - 3 = -2 + 7$
$5 = 5$ Good

Answer: 8

34. Solve the following equation.

$8x - 8 = 0$

$x =$ _____

Answer: 1

$8x - 8 = 0$

$8x - 8 + 8 = 0 + 8$

$8x = 8$

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

$x = 1$

Check

$8x - 8 = 0$

$8(1) - 8 = 0$

$8 - 8 = 0$

$0 = 0$ Good

35. Solve the equation.

$5n + 50 = 55$

$n =$ _____

Answer: 1

$5n + 50 = 55$

$5n + 50 - 50 = 55 - 50$

$5n = 5$

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

$n = 1$

Check

$5n + 50 = 55$

$5(1) + 50 = 55$

$5 + 50 = 55$

$55 = 55$ Good

36. Find the prime factorization of the following number.

18

The prime factorization of 18 is _____.

Answer: $2 \cdot 3^2$

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

2 | 18

3 | 9

3 | 3

1

$18 = 2 \cdot 3 \cdot 3$

or $18 = 2 \cdot 3^2$

37. Find the prime factorization of the following number.

102

The prime factorization of 102 is _____.

Answer: $3 \cdot 2 \cdot 17$

Primes 2, 3, 5, 7, 11, 13, 17, ...

2 | 102

3 | 51

17 | 17

1

$102 = 2 \cdot 3 \cdot 17$

OR

$102 = 3 \cdot 2 \cdot 17$

38. Divide.

$\frac{9}{16} \div \frac{17}{32}$

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

A. $\frac{9}{16} \div \frac{17}{32} =$ _____ (Type an integer or a simplified fraction.)

B. The answer is undefined.

Answer: A. $\frac{9}{16} \div \frac{17}{32} = \frac{18}{17}$ (Type an integer or a simplified fraction.)

$\frac{9}{16} \div \frac{17}{32} =$

$\frac{9}{16} \cdot \frac{32}{17} =$

$\frac{3 \cdot 3}{2 \cdot 2 \cdot 2 \cdot 2} \cdot \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}{17} =$

$\frac{3 \cdot 3 \cdot 2}{17} =$

$\frac{18}{17} =$

3 | 9

3 | 3

1

2 | 16

2 | 8

2 | 4

2 | 2

1

2 | 32

2 | 16

2 | 8

2 | 4

2 | 2

1

Primes 2, 3, 5, 7, 11, 13, 17, ...

39. Perform the indicated operation.

$8 \div \frac{7}{13}$

$8 \div \frac{7}{13} =$ ☐ (Simplify your answer.)

Answer: $\frac{104}{7}$

$8 \div \frac{7}{13} =$

$\frac{8}{1} \div \frac{7}{13} =$

$\frac{8}{1} \cdot \frac{13}{7} =$ rewrite

$\frac{2 \cdot 2 \cdot 2}{1} \cdot \frac{13}{7} =$

$\frac{104}{7} =$

Primes 2, 3, 5, 7,

2 | 8
2 | 4
2 | 2
1

40. Perform the indicated operation.

$\frac{5}{11} \div \frac{2}{33}$

$\frac{5}{11} \div \frac{2}{33} =$ ☐ (Type an integer or a simplified fraction.)

Answer: $\frac{15}{2}$

Primes 2, 3, 5, 7, 11, 13, 17, ...

$\frac{5}{11} \div \frac{2}{33} =$

$\frac{5}{11} \cdot \frac{33}{2} =$ rewrite

$\frac{5}{1} \cdot \frac{3 \cdot 11}{2} =$

$\frac{5 \cdot 3}{2} = \frac{15}{2}$

3 | 33
11 | 11
1

41. Find $\frac{1}{4}$ of 40.

$\frac{1}{4}$ of 40 is ☐. (Simplify your answer. Type a whole number, fraction, or mixed number.)

Answer: 10

Primes 2, 3, 5, 7, 11, 13, 17, ...

$\frac{1}{4} \cdot \frac{40}{1} =$

$\frac{1}{2 \cdot 2} \cdot \frac{2 \cdot 2 \cdot 2 \cdot 5}{1}$

$\frac{2 \cdot 5}{1} =$

$\frac{10}{1} = 10$

2 | 40
2 | 20
2 | 10
5 | 5
1

42. Find $\frac{5}{6}$ of 18. Write the answer in simplest form.

$\frac{5}{6}$ of 18 is ☐. (Simplify your answer.)

Answer: 15

$\frac{5}{6} \cdot \frac{18}{1}$

$\frac{5}{2 \cdot 3} \cdot \frac{2 \cdot 3 \cdot 3}{1} =$

$\frac{5 \cdot 3}{1} = 15$

43. Add and simplify.

$\frac{1}{21} + \frac{17}{21}$

$\frac{1}{21} + \frac{17}{21} =$ ☐ (Type an integer or a simplified fraction.)

Answer: $\frac{6}{7}$

Primes 2, 3, 5, 7, 11, 13, 17, ...

$\frac{1}{21} + \frac{17}{21} =$

$\frac{1+17}{21} =$

$\frac{18}{21} =$

$\frac{2 \cdot 3 \cdot 3}{3 \cdot 7} = \frac{2 \cdot 3}{7} = \frac{6}{7}$

44. Add and simplify.

$\frac{1}{2}+\frac{3}{8}$

$\frac{1}{2}+\frac{3}{8}=$ ☐ (Type an integer or a fraction.)

Answer: $\frac{7}{8}$

LCD = 8

$\frac{1}{2}+\frac{3}{8}=$

$\frac{1}{2}\left(\frac{4}{4}\right)+\frac{3}{8}=$

$\frac{4}{8}+\frac{3}{8}=$

$\frac{4+3}{8}=$ $\frac{7}{8}$

45. Perform the indicated operation.

$\frac{1}{7}-\frac{1}{9}$

$\frac{1}{7}-\frac{1}{9}=$ ☐ (Type a whole number or a simplified fraction.)

Answer: $\frac{2}{63}$

LCD = 63

$\frac{1}{7}-\frac{1}{9}=$

$\frac{1}{7}\left(\frac{9}{9}\right)-\frac{1}{9}\left(\frac{7}{7}\right)=$

$\frac{9}{63}-\frac{7}{63}=$

$\frac{9-7}{63}=$ $\frac{2}{63}$

46. Insert <, >, or = between the pair of numbers to form a true statement.

5.098 5.1

5.098 ☐ 5.1

Answer: <

5.098 < 5.100

47. Round 0.4071 to the nearest thousandth.

0.4071 ≈ ☐

Answer: 0.407

0.4071 since 1 < 5 do not round up

0.407

48. Round the monetary amount to the nearest dollar.

$50.96

$50.96 rounded to the nearest dollar is $ ☐.

Answer: 51

$50.96 since 9 > 5 round up

51

49. Write as a decimal.

$6\frac{1}{100}$

$6\frac{1}{100}$ = [ ]

Answer: 6.01

$6\ \frac{1}{100} =$

$6 + \frac{1}{100} =$

$6 + .01 =$

6.01

$100\overline{)1.00}$ → $.01$, $-(0)$, 0

50. Add the following.

2.5 + 6.12

2.5 + 6.12 = [ ] (Type an integer or a decimal.)

Answer: 8.62

$2.50 + 6.12 = 8.62$

51. Find the sum of 58, 5.003, and 8.402.

The sum is [ ].

Answer: 71.405

$58.000 + 5.003 + 8.402 = 71.405$

52. Subtract and check the following.

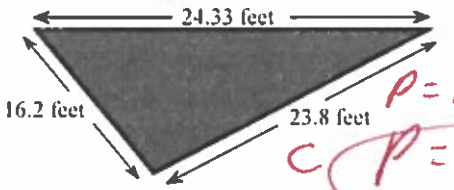
19 − 7.1

19 − 7.1 = [ ] (Type an integer or a decimal.)

Answer: 11.9

$19.0 - 7.1 = 11.9$

53. A landscape architect is planning a border for a flower garden shaped like a triangle. The sides of the garden measure 16.2 feet, 24.33 feet, and 23.8 feet. Find the amount of border material needed.



$P = A + B + C$

$P = 16.2 + 24.33 + 23.8$

$P = 64.33$

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

Answer: 64.33

$16.20 + 24.33 + 23.80 = 64.33$

54. 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

.25 .10 .05
x 3 x 2 x 3
.75 .20 .15

.75
.20
.15
1.10

The total value of the group is $ _____.

Answer: 1.10

55. Use the values of the coins given to the right. Name the different ways that coins can have a value of $0.16 given that you may use no more than 10 coins.

Penny Nickel Dime Quarter

$0.01 $0.05 $0.10 $0.25

$ 0.16

Choose the correct answer below. Select all that apply.

- [x] A. 1 dime and 6 pennies
- [x] B. 1 dime, 1 nickel and 1 penny
- [ ] C. 1 dime, 3 nickels and 4 pennies
- [x] D. 2 nickels and 6 pennies
- [ ] E. 3 nickels and 6 pennies
- [x] F. 3 nickels and 1 penny

Answer: A. 1 dime and 6 pennies, B. 1 dime, 1 nickel and 1 penny, D. 2 nickels and 6 pennies, F. 3 nickels and 1 penny

56. Multiply.

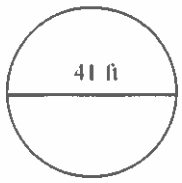
8.6
×0.7

8.6
×0.7
_____ (Type an integer or a decimal.)

8.6
x 0.7
6 0 2
0 0
6.02

Answer: 6.02

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



$C = \pi D$

$C = 3.14D$

$D = 41$

$C = \pi D$

$C = \pi(41)$

$C = 41\pi$

$C = 3.14(41)$

$C = 128.74$

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.)

3.14×41

314

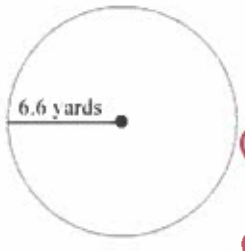
1256

128.74

Answers 41π

128.74

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



$C = 2\pi r$

$C = 2(3.14)r$

$C = 2\pi r$

$C = 2\pi(6.6)$

$C = 13.2\pi$

$C = 2(3.14)(6.6)$

$C = 41.448$

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.)

$6.6 \times 2 = 13.2$

Answers 13.2π

41.448

59. A 1-ounce serving of cream cheese contains 6.3 grams of saturated fat. How much saturated fat is in 12 ounces of cream cheese?

_____ g

$\frac{1}{6.3} = \frac{12}{N}$

$1(N) = 6.3(12)$ cross mult

$N = 75.6$

Answer: 75.6

60. The screen of a portable digital device is a rectangle that measures 3.5 inches by 2.6 inches. Find the area of the screen.

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

Answer: 9.1

L W

$A = LW$

$A = (3.5)(2.6)$

$A = 9.1$

3.5 × 2.6 = 210 + 70 = 9.10

61. The diameter of a ferris wheel is 290 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 290π

910.60

$C = \pi D$ $D = 290$

$C = 3.14D$

$C = \pi(290)$

$C = 290\pi$

$C = 3.14(290)$

$C \approx 910.60$

62. A meter is a unit of length approximately equal to 39.37 inches. If someone is 1.61 meters tall, what is his or her approximate height in inches?

Using the given conversion, someone who is 1.61 meters tall has a height of [ ] inches.
(Type an integer or a decimal.)

Answer: 63.3857

$\frac{1}{39.37} = \frac{1.61}{N}$

$1(N) = 39.37(1.61)$

$N = 63.3857$

63. Divide.

$0.72\overline{)4.464}$

The quotient is [ ].
(Type an integer or a decimal.)

Answer: 6.2

6.2

0.72 | 4.464

−(432)

144

−(144)

0 rem

64. Find the decimal equivalent of the following fraction.

$\frac{17}{20}$

$\frac{17}{20} =$ [ ]

Answer: 0.85

$\frac{17}{20}$

0.85

20 | 17.00

−(160)

100

−(100)

0 rem

65. Write $7\frac{9}{20}$ as a decimal.

$7\frac{9}{20}$ = _____

Answer: 7.45

$7\ \frac{9}{20} =$

$7 + \frac{9}{20} =$

$7 + 0.45 =$

$7.45 =$

$\frac{9}{20}$

$20\overline{)9.00}$ = .45

$-(80)$

100

$-(100)$

0 R

66. Solve the following equation.

$-6y = 2.22$

$y =$ _____ (Type an integer or a decimal.)

Answer: -0.37

$-6y = 2.22$

$\frac{-6y}{-6} = \frac{2.22}{-6}$

$y = -0.37$

$6\overline{)2.22}$ = .37

(18)

42

$-(42)$

0

67. Solve the following equation.

$-2.6x + 1.3 = -11.7$

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

Answer: 5

$-2.6x + 1.3 - 1.3 = -11.7 - 1.3$

$-2.6x = -13$

$\frac{-2.6x}{-2.6} = \frac{-13}{-2.6}$

$x = 5$

68. Solve.

$6x - 2 = 8x - 3$

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

Answer: 0.5

$6x - 2 = 8x - 3$

$6x - 2 + 2 = 8x - 3 + 2$

$6x = 8x - 1$

$6x - 8x = 8x - 1 - 8x$

$-2x = -1$

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

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

$x = 0.5$

$2\overline{)1.0}$ = 0.5

$-(10)$

0 Rem

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

22, 11, 15, 13, 14 11, 13, 14, 15, 22 rewrite

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.

$\frac{11+13+14+15+22}{5} =$

$\frac{75}{5} =$ mean

$15 =$

median = 14

there is no mode

Answers 15

14

B. There is no mode.

70. A stereo normally priced at $629 is on sale for 10% off. Find the discount and the sale price.

The discount is $_____.

The sale price is $_____.

$A = P - PD$

$A = 629 - 629(.10)$

$A = 629 - 62.90$ discount

$A = 566.10$ Sale Price

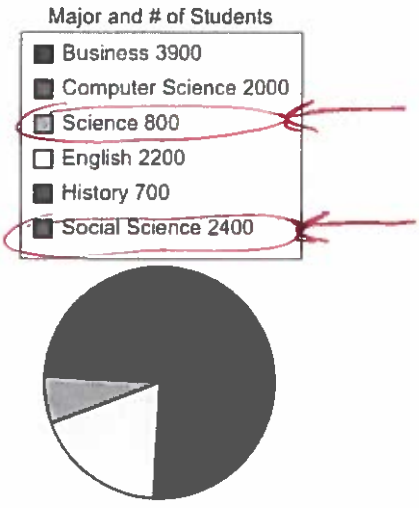
629 × .10 = 62.90

629.00 − 62.90 = 566.10

Answers 62.90

566.10

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



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

$\frac{\text{Science majors}}{\text{Social Science majors}} =$

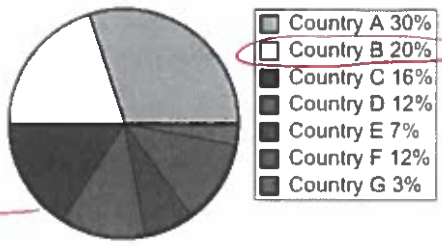
$\frac{800}{2400} =$

$\frac{800(1)}{800(3)} =$

$\frac{1}{3} =$

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

72. The total amount of land of some particular countries is approximately 64,000,000 square miles. Use the graph to find the area of the Country B.



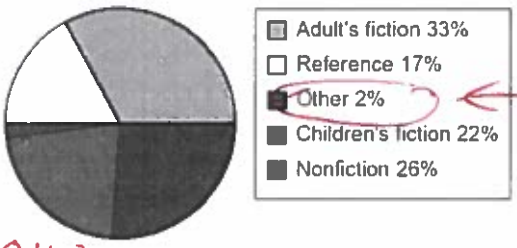
64,000,000 × .20 = 12,800,000

The area of the Country B is approximately _____ square miles.

Answer: 12,800,000

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

If the library has 122,000 books, find how many books are classified as Other.

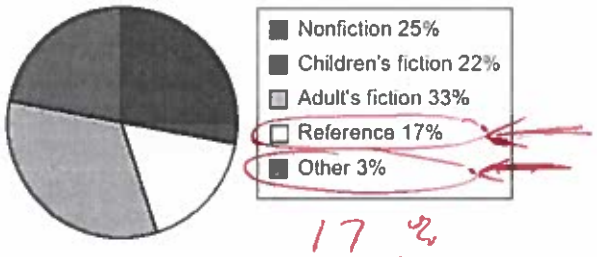


The number of books classified as Other is _____.
(Type a whole number.)

122,000 × .02 = 2,440

Answer: 2,440

74. If this library has 107,000 books, find how many books are in the category of reference or other?



107,000 × .20 = 21,400.00

17 + 3 = 20

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

Answer: 21,400

75. Find the square root.

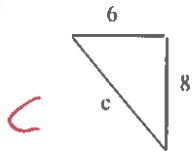
$\sqrt{49}$

$\sqrt{49}$ = _____

$\sqrt{49} = 7$, because $7 \cdot 7 = 49$

Answer: 7

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



A
B
C

$A^2+B^2=C^2$
$(6)^2+(8)^2=c^2$
$36+64=c^2$
$100=c^2$
$\sqrt{100}=\sqrt{c^2}$
$10=c$

The length of the third side is [ ].

Answer: 10

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

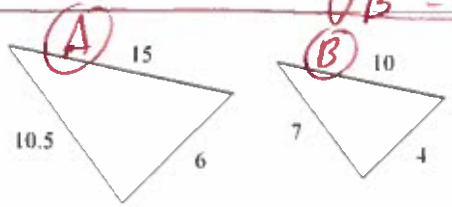
leg = 13, hypotenuse = 85

$A^2+B^2=C^2$
$13^2+B^2=(85)^2$
$169+B^2=7225$
$169+B^2-169=7225-169$
$B^2=7056$
$\sqrt{B^2}=\sqrt{7056}$
$B=84$

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

Answer: 84

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

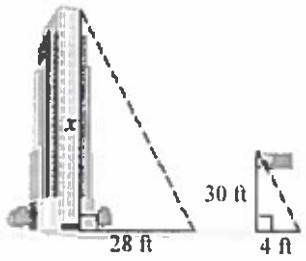


$\frac{A}{B}=$
$\frac{15}{10}=$
$\frac{3(5)}{2(5)}=$
$\frac{3}{2}=$

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

Answer: $\frac{3}{2}$

79. 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.



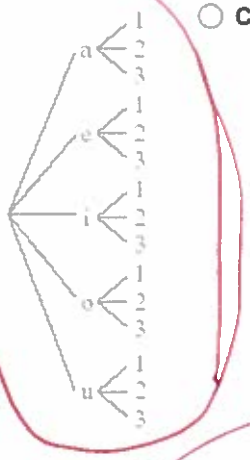
$\frac{x}{28}=\frac{30}{4}$ cross mult
$x(4)=28(30)$
$4x=840$
$\frac{4x}{4}=\frac{840}{4}$
$x=210$

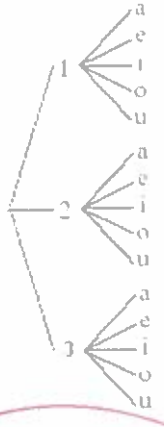
The height of the building is [ ] feet.

Answer: 210

80. Draw a tree diagram for choosing a vowel, (a, e, i, o, u) and then a number (1, 2 or 3). Use the diagram to find the number of possible outcomes.

○ A. 

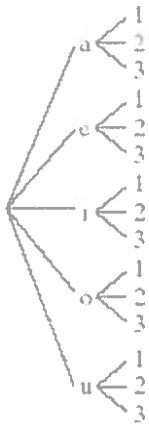
○ B. 

○ C. 

○ D. 

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

Answers



B.

15

(5)(3) =

15 =

81. A marble is selected at random from a jar containing 2 red marbles, 3 yellow marbles, and 4 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.)

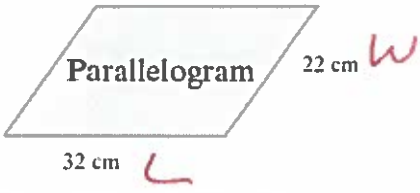
Answer: $\frac{2}{9}$

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

$$\frac{2}{2+3+4} =$$

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

82. Find the perimeter of the following figure.



$P = 2L + 2W$
$P = 2(32) + 2(22)$
$P = 64 + 44$
$P = 108$

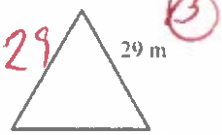
Perimeter = _____ (1) _____

(1) ○ cm
○ sq. cm

Answers 108

(1) cm

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



(A) (B) (C)

$P = A + B + C$
$P = 29 + 29 + 29$
$P = 58 + 29$
$P = 87$

Perimeter = _____ (1) _____

(1) ○ m
○ sq m

Answers 87

(1) m

84. A computer has shape of a rectangular solid. Find the volume of the computer, with dimensions of 4 inches by 4 inches by 4.1 inches.

The volume of the computer is _____ (1) _____
(Simplify your answer. Type an integer or a decimal.)

$V = LWH$
$V = (4)(4)(4.1)$
$V = 16(4.1)$
$V = 65.6$

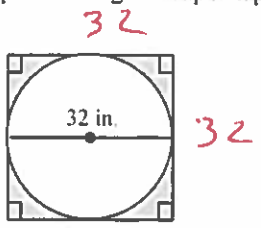
$16 \times 4.1 = 64 + 16 = 65.6$

(1) ○ cu in.
○ sq in.
○ in.

Answers 65.6

(1) cu in.

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



D=32
r=½(32)
r=16

The area of the shaded region is approximately _____ (1) _____
(Simplify your answer. Type an integer or a decimal.)

(1) ○ in.
○ cu in.
○ sq in.

Answers 220.16

(1) sq in.

Area SQuare
A=LW
A=(32)(32)
A=1024

Area Circle
A=πr²
A=3.14(16)²
A=3.14(16)(16)
A=3.14(256)
A=803.84

1024 Area SQuare
−803.84 Area Circle
220.16
Shaded Area

86. Insert <, >, or = in the space between the paired numbers to make the statement true.

7.27 ? 7.27

7.27 [ ] 7.27

Answer: =

7.27 = 7.27

87. Use the commutative and associative properties to simplify the expression.

(12 + a) + 12

(12 + a) + 12 = _____

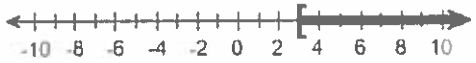
Answer: a + 24

(12+a)+12 =
12+a+12 =
a+12+12 = rewrite
a+24 =

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

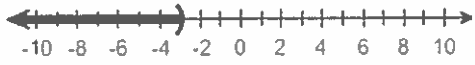
$3x - 3 \le 6x - 4x$

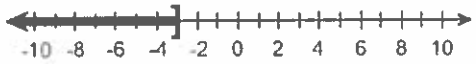
Choose the graph of the solution set.

○ A. 

○ B. 

○ C. 

○ D. 

○ E. 

○ F. 

The solution to the inequality $3x - 3 \le 6x - 4x$ is [ ].
(Type your answer in interval notation.)

$3x-3 \le 6x-4x$
$3x-3 \le 2x$
$3x-3+3 \le 2x+3$
$3x \le 2x+3$
$3x-2x \le 2x+3-2x$
$x \le 3$

Answers

B. 

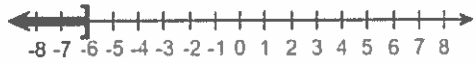
$(-\infty, 3]$

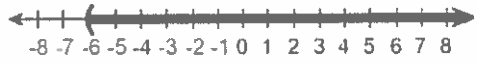
$(-\infty, 3]$

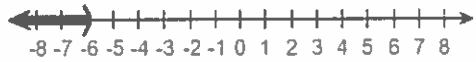
89. Solve the inequality. Graph the solution set and write it in interval notation.

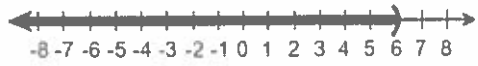
$5x < -30$

Choose the correct graph below.

○ A. 

○ B. 

○ C. 

○ D. 

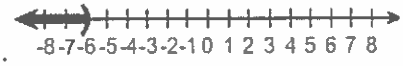
○ E. 

○ F. 

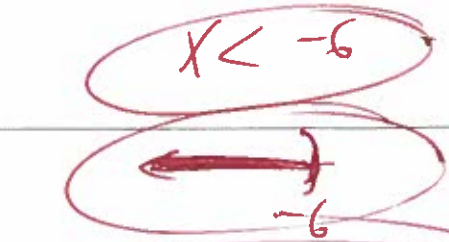
The solution to the inequality $5x < -30$ is [ ].
(Type your answer in interval notation.)

$5x < -30$
$\frac{5x}{5} < \frac{-30}{5}$
$x < -6$

Answers

C. 

$(-\infty, -6)$

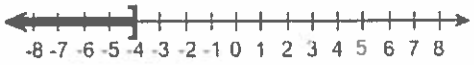


$(-\infty, -6)$

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

$-7x \leq 28$

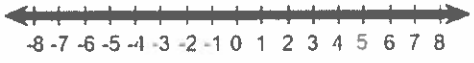
Choose the correct graph below.

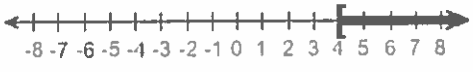
○ A. 

○ B. 

○ C. 

○ D. 

○ E. 

○ F. 

The solution to the inequality $-7x \leq 28$ is ☐.
(Type your answer in interval notation.)

Answers

C. 

$[-4, \infty)$

$-7x \leq 28$

$\frac{-7x}{-7} \geq \frac{28}{-7}$

$x \geq -4$

divide by a negative turn all sector around

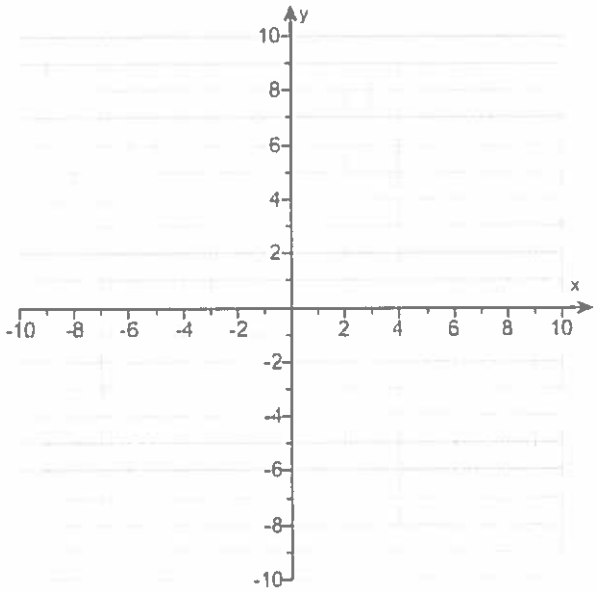
$[-4, \infty)$

91.

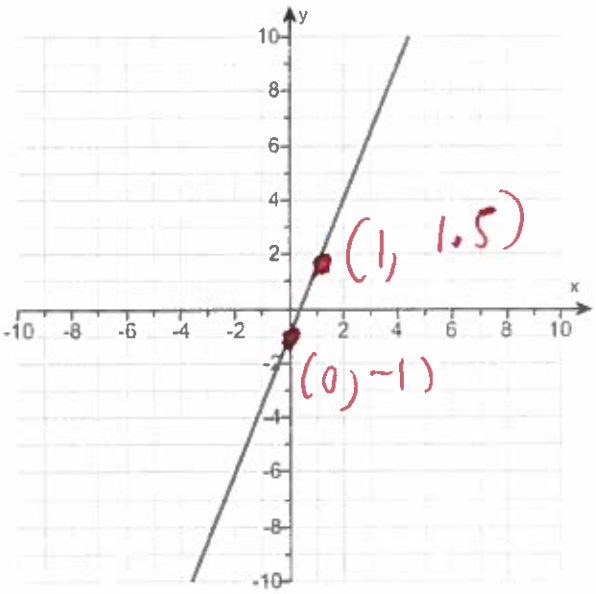
Graph the linear equation.

$y = 2.5x - 1$

Use the graphing tool to graph the equation.



Answer:



$y = 2.5x - 1$

$y = 2.5(0) - 1$

$y = 0 - 1$

$y = -1$

x	y
0	-1
1	1.5

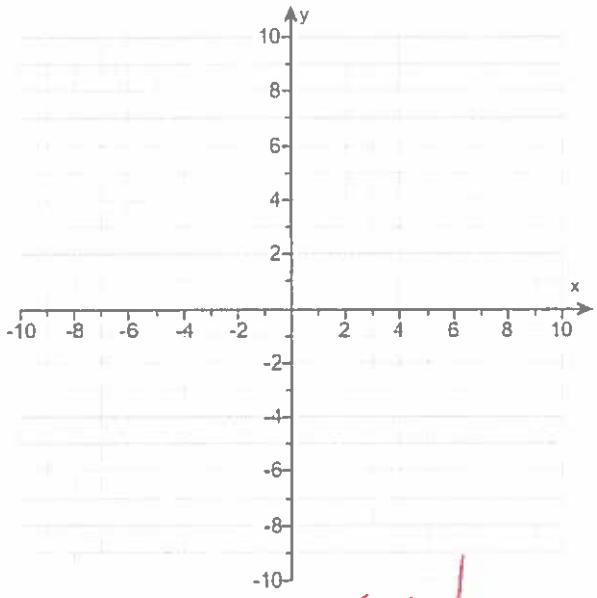
$y = 2.5(1) - 1$

$y = 2.5 - 1$

$y = 1.5$

92.

Graph the linear equations y = 3x and y = 3x + 2 on the same set of axes. Discuss how the graphs are similar and how they are different.

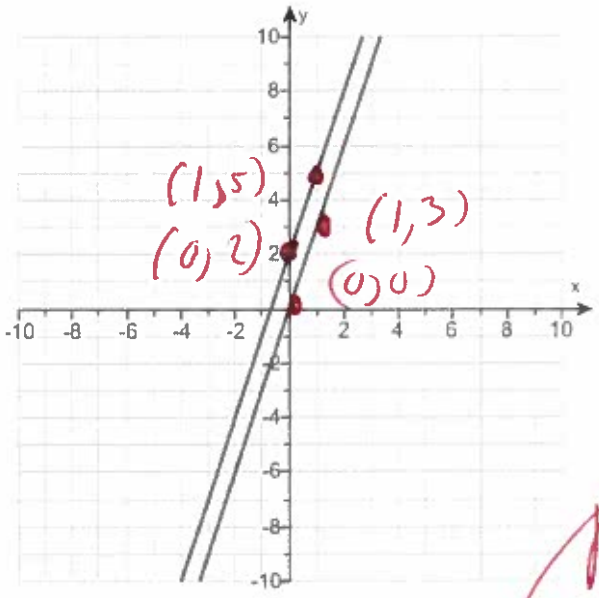


Use the graphing tool to graph the linear equations.

How are the graphs similar and how are they different?

- ○ **A.** Both graphs have the same tilt, but they cross the y-axis at different points.
- ○ **B.** Both graphs have different tilts, but they cross the y-axis at the same point.
- ○ **C.** Both graphs have the same tilt, and they cross the y-axis at the same point.
- ○ **D.** Both graphs have different tilts, and they cross the y-axis at different points.

Answers



$y = 3x$

$y = 3(0)$

$y = 0$

$y = 3(1)$

$y = 3$

x	y
0	0
1	3

Parallel lines

A. Both graphs have the same tilt, but they cross the y-axis at different points.

$y = 3x + 2$

$y = 3(0) + 2$

$y = 0 + 2$

$y = 2$

$y = 3(1) + 2$

$y = 3 + 2$

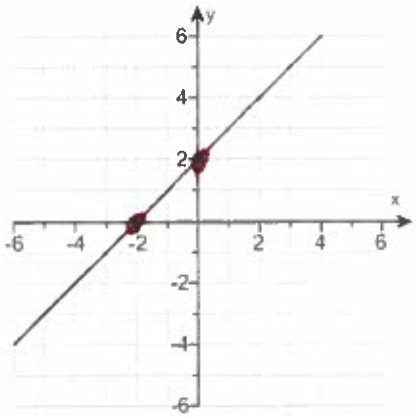
$y = 5$

x	y
0	2
1	5

Never intersect

93.

Identify the intercepts.



Identify all the x-intercepts.

(Type an ordered pair. Use a comma to separate answers as needed.)

Identify all the y-intercepts.

(Type an ordered pair. Use a comma to separate answers as needed.)

Answers (−2,0)

(0,2)

x-intercept = −2 OR (−2, 0)

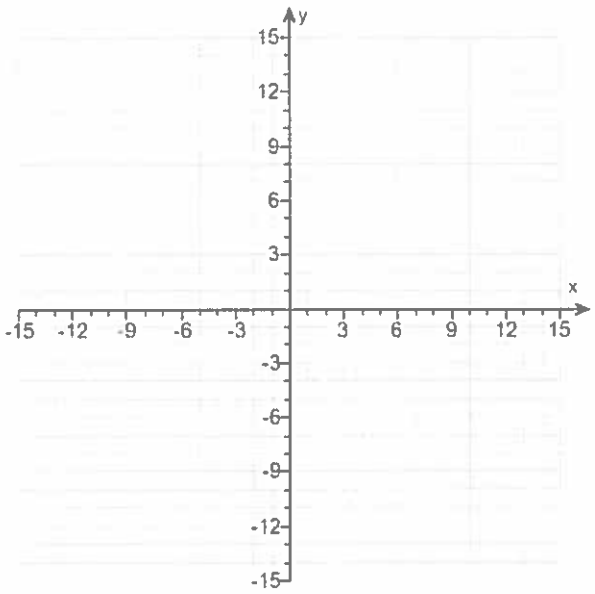
y-intercept = 2 OR (0, 2)

94.

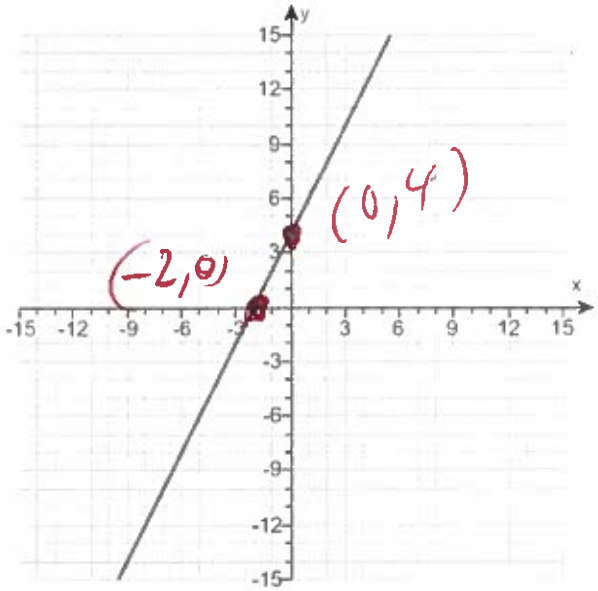
Graph using the x- and y-intercepts.

$y = 2x + 4$

Use the graphing tool to graph the linear equation. Use the intercepts when drawing the line. If only one intercept exists, use it and another point to draw the line.



Answer:



find x-intercept let $y = 0$

$y = 2x + 4$

$0 = 2x + 4$

$0 - 4 = 2x + 4 - 4$

$-4 = 2x$

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

$-2 = x$

x-intercept $(-2, 0)$

find y-intercept let $x = 0$

$y = 2x + 4$

$y = 2(0) + 4$

$y = 0 + 4$

$y = 4$

$(0, 4)$ y-intercept

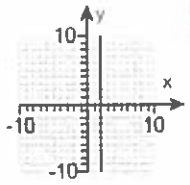
y=2

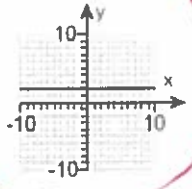
x	y
0	2
1	2

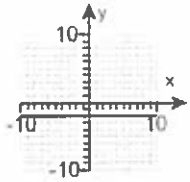
95. Match the equation with its graph.

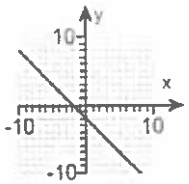
y = 2

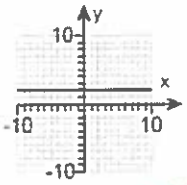
Choose the correct graph below.

A. 

B. 

C. 

D. 

Answer: 

B.

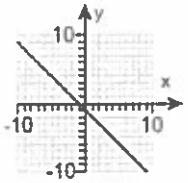
x=1

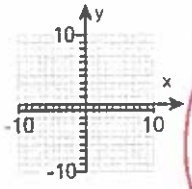
x	y
1	0
1	1

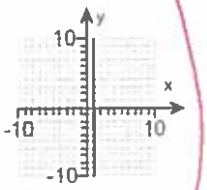
96. Match the equation with its graph.

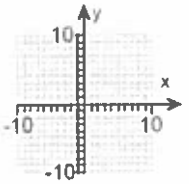
x = 1

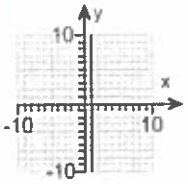
Choose the correct graph below.

A. 

B. 

C. 

D. 

Answer: 

C.

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

(−5, 2) and (−3, 6)

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 2. (Type an integer or a simplified fraction.)

98. Solve the following equation for y.

$y - 7 = 6(x - (-2))$

y = _____ (Simplify your answer.)

Answer: 6x + 19

99. Find an equation of the line described below. Write the equation in slope-intercept form (solved for y), when possible.

Through (11,3) and (3,11)

What is the equation of the line?

_____

(Simplify your answer.)

Answer: y = −x + 14

100. Find the slope-intercept form of the line whose slope is 4 and that passes through the point (−6,8).

The equation of the line is _____.
(Type your answer in slope-intercept form.)

Answer: y = 4x + 32

101. Solve the system of equations by the substitution method.

$$\begin{cases} y = 2x + 1 \\ 4y - 6x = 10 \end{cases}$$

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

- A. The solution is _____. (Simplify your answer. Type an ordered pair.)
- B. There are infinitely many solutions; {(x,y)|y = 2x + 1} or {(x,y)|4y − 6x = 10}.
- C. There is no solution; {} or ∅.

Answer: A. The solution is (3,7). (Simplify your answer. Type an ordered pair.)

102. Solve the system of equations by the addition method.

$$\begin{cases} 5x - y = 15 \\ 2x + y = 13 \end{cases}$$

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

- A. The solution is _____. (Simplify your answer. Type an ordered pair.)
- B. There are infinitely many solutions; {(x,y)|5x − y = 15} or {(x,y)|2x + y = 13}.
- C. There is no solution; {} or ∅.

Answer: A. The solution is (4,5). (Simplify your answer. Type an ordered pair.)

103. Jen Butler has been pricing Speed-Pass train fares for a group trip to New York. Three adults and four children must pay $129. Two adults and three children must pay $92. Find the price of the adult's ticket and the price of a child's ticket.

The price of an adult's ticket is $_____.

The price of a child's ticket is $_____.

Answers 19

18

104. Kevin and Randy Muise have a jar containing 91 coins, all of which are either quarters or nickels. The total value of the coins in the jar is $12.95. How many of each type of coin do they have?

The jar contains _____ quarters.

The jar contains _____ nickels.

Answers 42

49

105. Simplify the following expression by combining the like terms.

$-6a^2 - 5ab + 2b^2 - 3a^2 - 9ab + 4b^2$

$-6a^2 - 5ab + 2b^2 - 3a^2 - 9ab + 4b^2 =$ _____

Answer: $-9a^2 - 14ab + 6b^2$

106. Perform the indicated operation.

$(-3x-5)+(8x^2+3x+10)$ =

$(-3x-5)+(8x^2+3x+10)=$ ____ (Simplify your answer.)

Answer: $8x^2+5$

$-3x-5+8x^2+3x+10=$

$8x^2+5=$

107. Subtract.

$(4y^2+8y-8)-(-5y+6)$ =

$(4y^2+8y-8)-(-5y+6)=$ ____ (Simplify your answer.)

Answer: $4y^2+13y-14$

$4y^2+8y-8+5y-6=$

$4y^2+13y-14=$

108. Multiply.

$3x(4x^2-3x+5)$ =

$3x(4x^2-3x+5)=$ ____ (Simplify your answer.)

Answer: $12x^3-9x^2+15x$

$12x^3-9x^2+15x$

109. Multiply.

$(5x+2)(4x+9)$ =

$(5x+2)(4x+9)=$ ____ (Simplify your answer.)

Answer: $20x^2+53x+18$

$(5x+2)(4x+9)$

$20x^2+45x+8x+18=$

$20x^2+53x+18=$

110. Multiply.

$(x+6)(x^3-4x+2)$

$(x+6)(x^3-4x+2)=$ ____

Answer: $x^4+6x^3-4x^2-22x+12$

$(x+6)(x^3-4x+2)=$

$x^4-4x^2+2x+6x^3-24x+12=$

$x^4+6x^3-4x^2-22x+12=$

111. Find the following product.

$(4a+8)(9a^2-5a+7)$

$(4a+8)(9a^2-5a+7) =$ _____

Answer: $36a^3+52a^2-12a+56$

$(4a+8)(9a^2-5a+7) =$
$36a^3-20a^2+28a+72a^2-40a+56 =$
$36a^3+52a^2-12a+56 =$

112. Multiply vertically.

$(x^2+6x-2)(2x^2+7x-6)$

$(x^2+6x-2)(2x^2+7x-6) =$ _____ (Simplify your answer.)

Answer: $2x^4+19x^3+32x^2-50x+12$

$(x^2+6x-2)(2x^2+7x-6)$
$2x^4+7x^3-6x^2+12x^3+42x^2-36x$
$-4x^2-14x+12 =$
$2x^4+19x^3+32x^2-50x+12 =$

113. Multiply.

$(a-5)(a+5)$

$(a-5)(a+5) =$ _____ (Simplify your answer.)

Answer: a^2-25

$(a-5)(a+5) =$
$a^2+5a-5a-25 =$
$a^2-25 =$

114. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0.

$$\frac{a^{-3}}{a^{-7}}$$

$\frac{a^{-3}}{a^{-7}} =$ _____ (Use positive exponents only.)

Answer: a^4

$\frac{a^{-3}}{a^{-7}} =$
$a^{7-3} =$
$a^4 =$
$\frac{a^7}{a^3} =$ reverse

115. Factor a negative number or a GCF with a negative coefficient from the polynomial.

$-3x-9$

$-3x-9 =$ _____ (Factor completely.)

Answer: $-3(x+3)$

$-3x-9 =$
$-3(x+3) =$

116. Complete the factoring.

$x^2 + 13x + 30$

Answer: $x + 10$

$x^2 + 13x + 30 = (x + 3)($ ____ $)$

Possible: 30·1, 15·2, 10·3, 6·5

$(x+3)(x+10) =$

117. Complete the factoring.

$x^2 - 11x + 30$

Answer: $x - 5$

$x^2 - 11x + 30 = (x - 6)($ ____ $)$

Possible: 30·1, 15·2, 10·3, 6·5

$(x-5)(x-6) =$

118. Factor the trinomial completely.

$5x^2 + 50x + 80$

Possible: 16·1, 8·2, 4·4

$5x^2 + 50x + 80 =$

$5(x^2 + 10x + 16) =$

$5(x+2)(x+8) =$

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

- A. $5x^2 + 50x + 80 =$ ____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $5x^2 + 50x + 80 =$ **$5(x + 2)(x + 8)$** (Factor completely.)

119. Factor completely.

$5x^2 + 34x + 24$

Possible: 24·1, 12·2, 6·4, 3·8

$5x^2 + 34x + 24 =$

$(5x+4)(x+6) =$

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

- A. $5x^2 + 34x + 24 =$ ____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $5x^2 + 34x + 24 =$ **$(5x + 4)(x + 6)$** (Factor completely.)

120. Factor the following binomial completely.

$81x^2 - 196y^2$

formula $a^2 - b^2 = (a+b)(a-b)$

$81x^2 - 196y^2 =$

$(9x)^2 - (14y)^2 =$

$(9x+14y)(9x-14y) =$

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

- A. $81x^2 - 196y^2 =$ ____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $81x^2 - 196y^2 =$ **$(9x + 14y)(9x - 14y)$** (Factor completely.)

121. Solve the equation.

$(x-9)(x+7)=0$

$x=$ ☐

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 9, −7

$(x-9)(x+7)=0$
$x-9=0$ OR $x+7=0$
$x-9+9=0+9$ OR $x+7-7=0-7$
$x=9$ OR $x=-7$

122. Solve the equation.

$8x(x-1)=0$

$x=$ ☐ (Use a comma to separate answers as needed.)

Answer: 1,0

$8x(x-1)=0$
$8x=0$ OR $x-1=0$
$\frac{8x}{8}=\frac{0}{8}$ OR $x-1+1=0+1$
$x=0$ OR $x=1$

123. Solve the equation.

$(2x+5)(8x-9)=0$

$x=$ ☐

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-\frac{5}{2}, \frac{9}{8}$

$2x+5=0$ OR $8x-9=0$
$2x+5-5=0-5$ OR $8x-9+9=0+9$
$2x=-5$ OR $8x=9$
$\frac{2x}{2}=\frac{-5}{2}$ OR $\frac{8x}{8}=\frac{9}{8}$
$x=-5/2$ OR $x=\frac{9}{8}$

124. Solve the equation.

$x^2-12x+35=0$

$x=$ ☐

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 5,7

$(x-5)(x-7)=0$
$x-5=0$ OR $x-7=0$
$x-5+5=0+5$ OR $x-7+7=0+7$
$x=5$ OR $x=7$

Possible: 35, 1; 5, 7

125. Solve.

$x^2+3x-18=0$

$x=$ ☐

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: −6,3

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

Possible: 18, 1; 9, 2; 6, 3

126. Solve the equation.

$12x^2 + 44x = 16$

$x =$ [ ]

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $\frac{1}{3}, -4$

$12x^2+44x-16=0$

$4(3x^2+11x-4)=0$

$4(3x-1)(x+4)=0$

set $4=0$ OR $3x-1=0$ OR $x+4=0$

$3x-1+1=0+1$ OR $x+4-4=0-4$

$3x=1$ $x=-4$

$\frac{3x}{3}=\frac{1}{3}$ $x=\frac{1}{3}$

127. Find the dimensions of a rectangle whose width is 5 miles less than its length, and whose area is 66 square miles.

The length of the rectangle is [ ] miles.

The width of the rectangle is [ ] miles.

Answers 11

6

[ ] $L-5$

L

$L(L-5)=66$

$L^2-5L=66$

$L^2-5L-66=0$

$(L+6)(L-11)=0$

$L+6=0$ or $L-11=0$

$L+6-6=0-6$ OR $L-11+11=0+11$

$L=-6$ OR $L=11$

$L=11$

$L-5=11-5=6$

length = 11

width = 6

128. Find the quotient and simplify the result.

$\frac{16x^7}{y^2} \div \frac{2x^7y^2}{3} =$

$\frac{16x^7}{y^2} \div \frac{2x^7y^2}{3} =$ [ ] (Simplify your answer.)

Answer: $\frac{24}{y^4}$

$\frac{16x^7}{y^2} \cdot \frac{3}{2x^7y^2} =$

$\frac{48x^7}{2x^7y^4} =$

$\frac{48x^7}{2x^7y^4} =$

$\frac{48}{2y^4} =$

$\frac{2(24)}{2y^4} =$

$\frac{24}{y^4} =$

129. Find an equation of the line. Write the equation using function notation.

Through $(4, -1)$; perpendicular to $3y = x - 6$

The equation of the line is $f(x) =$ [ ].

Answer: $-3x + 11$

$3y = x - 6$

$3y = 1x - 6$

$\frac{3y}{3} = \frac{1x}{3} - \frac{6}{3}$

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

$m_{perpendicular} = -3$

$m = -3$ Point $(4, -1)$ x_1 y_1

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

$y-(-1) = -3(x-(4))$

$y+1 = -3(x-4)$

$y+1 = -3x+12$

$y+1-1 = -3x+12-1$

$y = -3x+11$

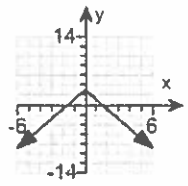
130. Graph the function.

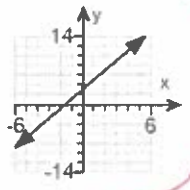
$f(x) = 2x + 3$

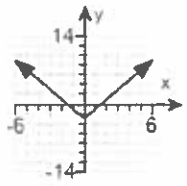
$f(x) = 2x+3$

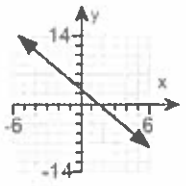
x	f(x)
0	3
1	5

Choose the correct graph below.

A. 

B. 

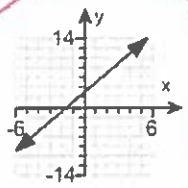
C. 

D. 

$f(0) = 2(0)+3$ $f(1) = 2(1)+3$

$f(0) = 0+3$ $f(1) = 2+3$

$f(0) = 3$ $f(1) = 5$

Answer: 

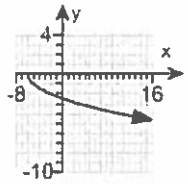
B.

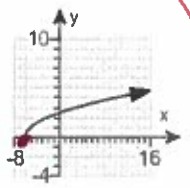
131. Graph the function.

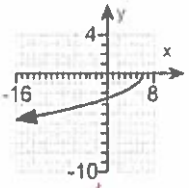
$f(x) = \sqrt{x+6}$

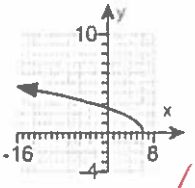
x	f(x)
-6	0
-5	1
-2	2
3	3

Choose the correct graph below.

A. 

B. 

C. 

D. 

$f(x) = \sqrt{x+6}$

$f(-6) = \sqrt{-6+6}$

$f(-6) = \sqrt{0}$

$f(-6) = 0$

$f(-5) = \sqrt{-5+6}$

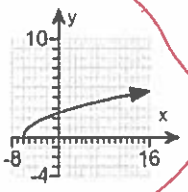
$f(-5) = \sqrt{1}$

$f(-5) = 1$

$f(-2) = \sqrt{-2+6}$

$f(-2) = \sqrt{4}$

$f(-2) = 2$

Answer: 

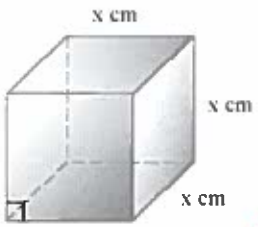
B.

$f(3) = \sqrt{3+6}$

$f(-3) = \sqrt{9}$

$f(3) = 3$

132. 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 16 centimeters.



$V(x) = x^3$
$V(16) = 16^3$
$V(16) = 16 \cdot 16 \cdot 16$
$V(16) = 256 \cdot 16$
$V(16) = 4096$

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

Answer: 4096

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

$y = 7$ when $x = 14$

Find the constant of variation k.

$k =$ _____ (Type an integer or a fraction. Simplify your answer.)

Complete the direct variation equation given $y = 7$ when $x = 14$.

$y =$ _____ (Use integers or fractions for any numbers in the expression.)

$y = kx$
$7 = k(14)$
$7 = 14k$
$\frac{7}{14} = \frac{14k}{14}$
$\frac{7}{14} = k$
$\frac{1}{2} = k$

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

Answers $\frac{1}{2}$

$\frac{1}{2}x$

134. The amount P of pollution varies directly with the population N of people. City A has a population of 416,000 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.)

$y = kx$
$260000 = k(416000)$
$\frac{260000}{416000} = \frac{416000k}{416000}$
$.625 = k$

$y = .625x$
$y = .625(350000)$
$y = 218750$

Answer: 218,750

135. Solve the absolute value equation.

$|2x - 5| = 11$

$2x - 5 = -11$ OR $2x - 5 = 11$
$2x - 5 + 5 = -11 + 5$ OR $2x - 5 + 5 = 11 + 5$
$2x = -6$ OR $2x = 16$
$\frac{2x}{2} = \frac{-6}{2}$ OR $\frac{2x}{2} = \frac{16}{2}$
$x = -3$ OR $x = 8$

$|x| = a$
$x = -a$ OR $x = a$

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

- A. The solution set is {_____}.
  (Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- B. The solution set is ∅.

Answer: A. The solution set is {8, −3}.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

136. Solve the inequality. Then graph the solution set.

$|x-5|<8$

$-8<x-5<8$

$-8+5<x-5+5<8+5$

$-3<x<13$

$|x|<a$

$-a<x<a$

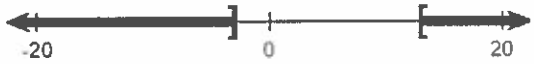
Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A. The solution is one or more intervals. The solution is _____.
  (Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)
- B. There are only one or two solutions. The solution set is {_____}.
  (Type an integer or a fraction. Use a comma to separate answers as needed.)
- C. There is no solution.

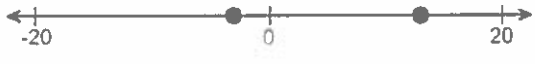
$(-3, 13)$

Choose the correct graph below.

A.

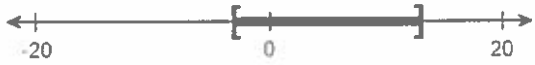


B.

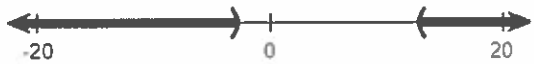


C.

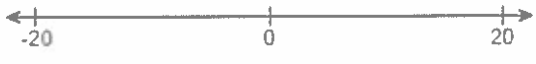
D.



E.

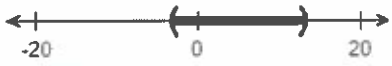


F.



Answers A. The solution is one or more intervals. The solution is $(-3,13)$.
(Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)

C.



137. Determine which ordered pairs given are solutions of the linear inequality in two variables.

$x-y>4$; $(2,-2), (9,3)$

$x-y>4$ $(2,-2)$

$(2)-(-2)>4$

$2+2>4$

$4>4$

NO

$x-y>4$ $(9,3)$

$(9)-(3)>4$

$9-3>4$

$6>4$

YES

Is the ordered pair $(2,-2)$ a solution to the inequality?

- Yes
- No

Is the ordered pair $(9,3)$ a solution to the inequality?

- No
- Yes

Answers No

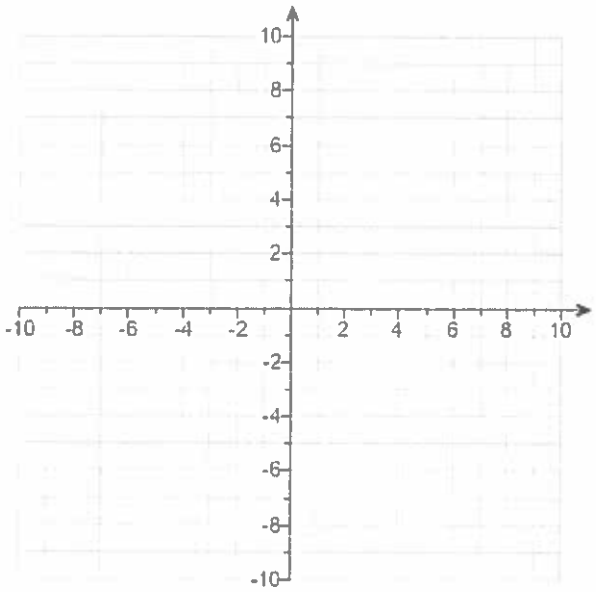
Yes

138.

Graph the following inequality.

$2x + y > -2$

Use the graphing tool to graph the inequality.

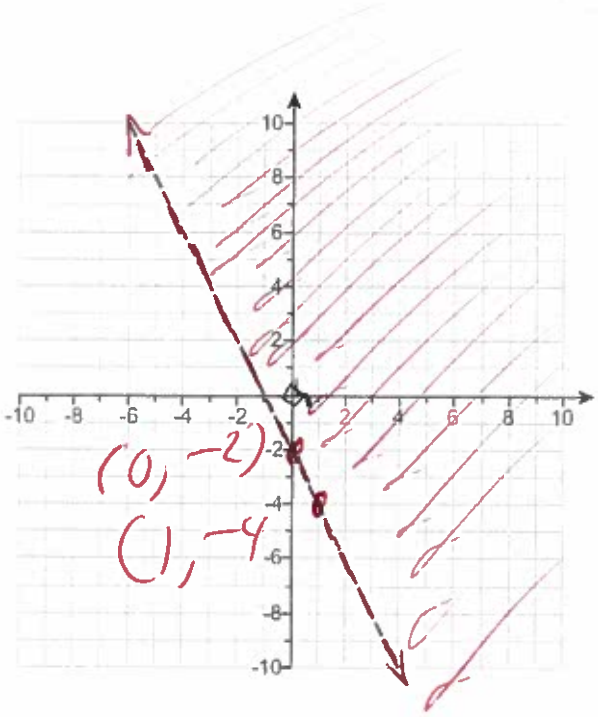


$2x + y - 2x > -2 - 2x$

$y > -2 - 2x$

$y > -2x - 2$

Answer:



$y = -2x - 2$

$y = -2(0) - 2$

$y = 0 - 2$

$y = -2$

$y = -2(1) - 2$

$y = -2 - 2$

$y = -4$

x	y
0	-2
1	-4

139. Use radical notation to write the expression. Simplify if possible. Assume that all variables represent nonnegative quantities.

$(9x^8)^{\frac{1}{2}}$ $= (3^2x^8)^{1/2} = 3^{2(\frac{1}{2})}x^{8(\frac{1}{2})} = 3^{\frac{2}{2}}x^{\frac{8}{2}} = 3^1x^4$

$3x^4$

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

○ **A.** $(9x^8)^{\frac{1}{2}} =$ _____
(Simplify your answer. Type an exact answer, using radicals as needed.)

○ **B.** The answer is not a real number.

Answer: A. $(9x^8)^{\frac{1}{2}} =$ **$3x^4$** (Simplify your answer. Type an exact answer, using radicals as needed.)

---

140. Simplify by factoring.

$\sqrt{50}$

Answer: $5\sqrt{2}$

$\sqrt{25 \cdot 2} = \sqrt{25}\sqrt{2} = 5\sqrt{2}$

$\sqrt{50} =$ _____
(Type an exact answer, using radicals as needed.)

$50 = 5 \cdot 5 \cdot 2$

$50 = 25 \cdot 2$

Prime 2, 3, 5, 7, ..

2 | 50
5 | 25
5 | 5
1

---

141. Solve.

$\sqrt{x-8} = 4$

$(\sqrt{x-8})^2 = (4)^2$

$x - 8 = 16$

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

○ **A.** The solution(s) is(are) x = _____.
(Use a comma to separate answers as needed.)

○ **B.** The solution set is ∅.

$x - 8 + 8 = 16 + 8$

$x = 24$

Answer: A. The solution(s) is(are) x = **24**. (Use a comma to separate answers as needed.)

---

142. Use the square root property to solve the equation. The equation has real number solutions.

$(x+3)^2 = 16$

$\sqrt{(x+3)^2} = \pm\sqrt{16}$

$x + 3 = \pm 4$

x = _____
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: 1, −7

$x + 3 = -4$ OR $x + 3 = 4$

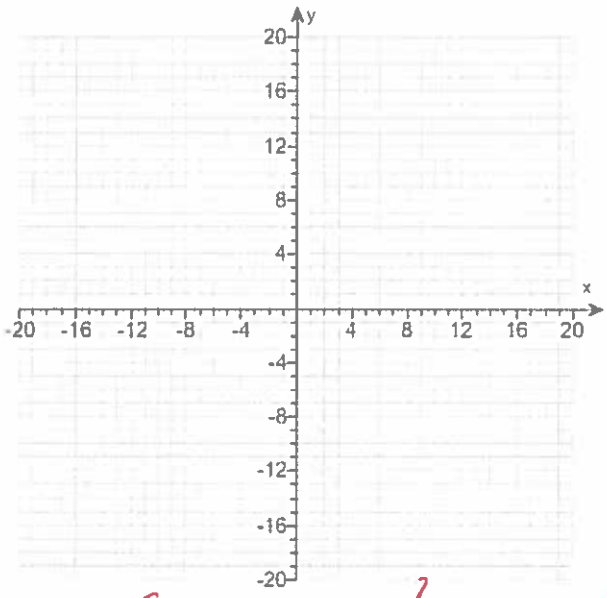
$x + 3 - 3 = -4 - 3$ OR $x + 3 - 3 = 4 - 3$

$x = -7$ OR $x = 1$

143.

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

$f(x) = -3(x+2)^2 + 4$



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.)

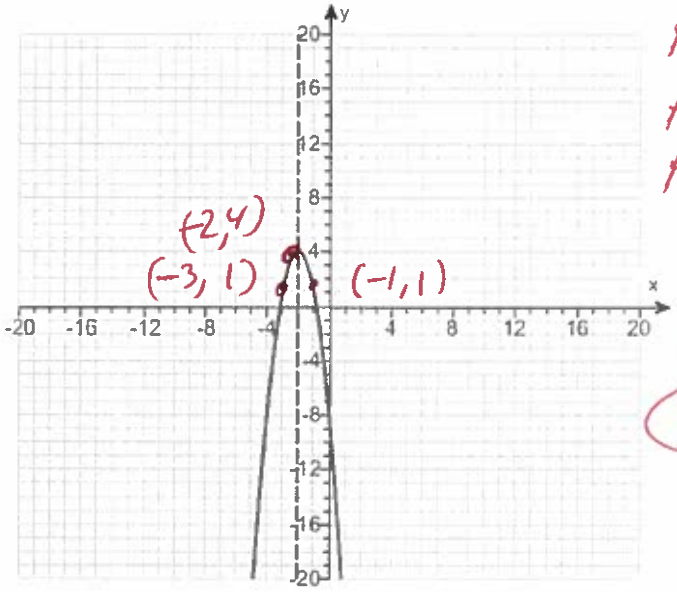
Vertex (-2, 4)

$f(x) = -3(x+2)^2 + 4$

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

$f(-3) = -3(-3+2)^2 + 4$
$f(-3) = -3(-1)^2 + 4$
$f(-3) = -3(-1)(-1) + 4$
$f(-3) = -3(1) + 4$
$f(-3) = -3 + 4$
$f(-3) = 1$

Answers



(-2,4)

x = -2

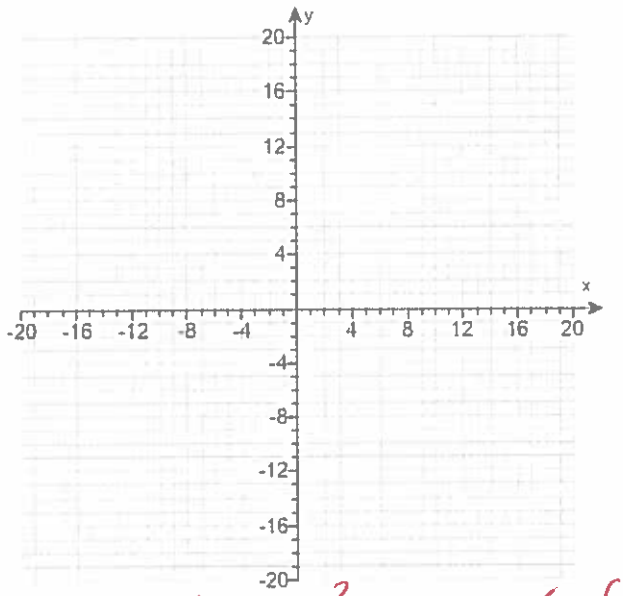
$f(-1) = -3(-1+2)^2 + 4$
$f(-1) = -3(1)^2 + 4$
$f(-1) = -3(1)(1) + 4$
$f(-1) = -3(1) + 4$
$f(-1) = -3 + 4$
$f(-1) = 1$

$f(-2) = -3(-2+2)^2 + 4$
$f(-2) = -3(0)^2 + 4$
$f(-2) = -3(0)(0) + 4$
$f(-2) = -3(0) + 4$
$f(-2) = 0 + 4$
$f(-2) = 4$

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

$$f(x) = \frac{1}{4}(x-6)^2 - 5$$

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

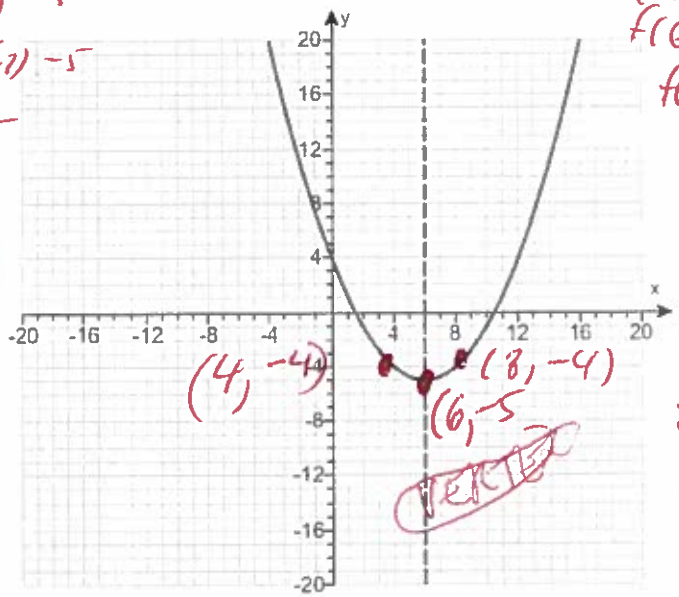


What is the vertex of the graph?
The vertex is [ ].
(Type an ordered pair.)

What is the equation of the axis of symmetry?
[ ]
(Type an equation.)

$f(4) = \frac{1}{4}(4-6)^2 - 5$
$f(4) = \frac{1}{4}(-2)^2 - 5$
$f(4) = \frac{1}{4}(-2)(-2) - 5$
$f(4) = \frac{1}{4}(4) - 5$
$f(4) = 1 - 5$
$f(4) = -4$

Answers



$f(x) = \frac{1}{4}(x-6)^2 - 5$
$f(6) = \frac{1}{4}(6-6)^2 - 5$
$f(6) = \frac{1}{4}(0)^2 - 5$
$f(6) = \frac{1}{4}(0)(0) - 5$
$f(6) = \frac{1}{4}(0) - 5$
$f(6) = 0 - 5$
$f(6) = -5$

x	f(x)
4	-4
6	-5
8	-4

$f(8) = \frac{1}{4}(8-6)^2 - 5$
$f(8) = \frac{1}{4}(2)^2 - 5$
$f(8) = \frac{1}{4}(2)(2) - 5$
$f(8) = \frac{1}{4}(4) - 5$
$f(8) = 1 - 5$
$f(8) = -4$

(6, − 5)

x = 6

145. Find the vertex of the graph of the following quadratic function.

$f(x) = -x^2 - 10x - 9$

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

Answer: (− 5,16)

$f(x) = -x^2 - 10x - 9$
$a = -1,\ b = -10,\ c = -9$
vertex $= \left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$
vertex $= \left(-\frac{-(-10)}{2(-1)}, f\frac{-(-10)}{2(-1)}\right)$
vertex $= \left(\frac{10}{-2}, f\left(\frac{10}{-2}\right)\right)$

vertex $= (-5, f(-5))$
vertex $= (-5, -(-5)^2 - 10(-5) - 9)$
vertex $= (-5, -(-5)(-5) - 10(-5) - 9)$
vertex $= (-5, -25 + 50 - 9)$
vertex $= (-5, 16)$

(-5,16)

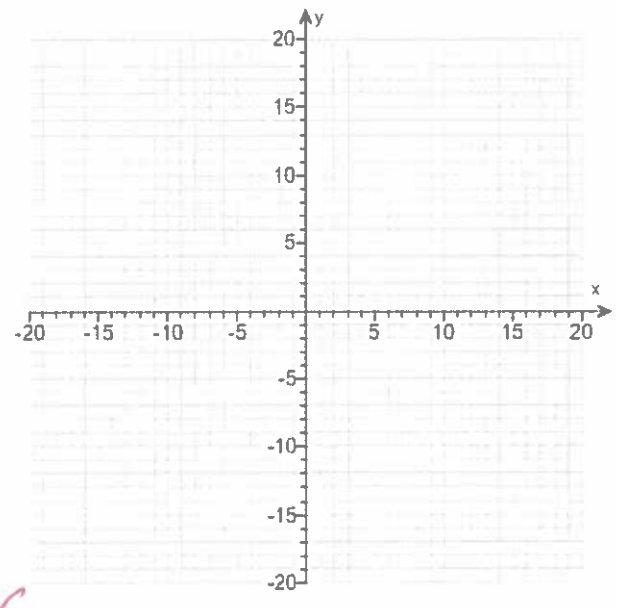
domain all real numbers
range $(-\infty, 16]$

EXAM NOTE →

146.

Find the vertex of the graph of the quadratic function. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.

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



The vertex of the quadratic function is the point [ ].
(Type your answer as an ordered pair.)

Does the graph open upward or downward?

- A. The parabola opens downward.
- B. The parabola opens upward.

Find any x-intercepts of the graph.

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

- A. The x-intercept(s) is(are) _____.
  (Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
- B. There is no x-intercept.

Find any y-intercepts of the graph.

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

- A. The y-intercept(s) is(are) _____.
  (Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
- B. There is no y-intercept.

Use the graphing tool on the right to graph the parabola.

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

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

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

$f(-1) = 1 - 1$

$f(-1) = 0$

x	f(x)
-1	0
0	-1
1	0

$f(0) = (0)^2 - 1$

$f(0) = (0)(0) - 1$

$f(0) = 0 - 1$

$f(0) = -1$

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

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

$f(1) = 1 - 1$

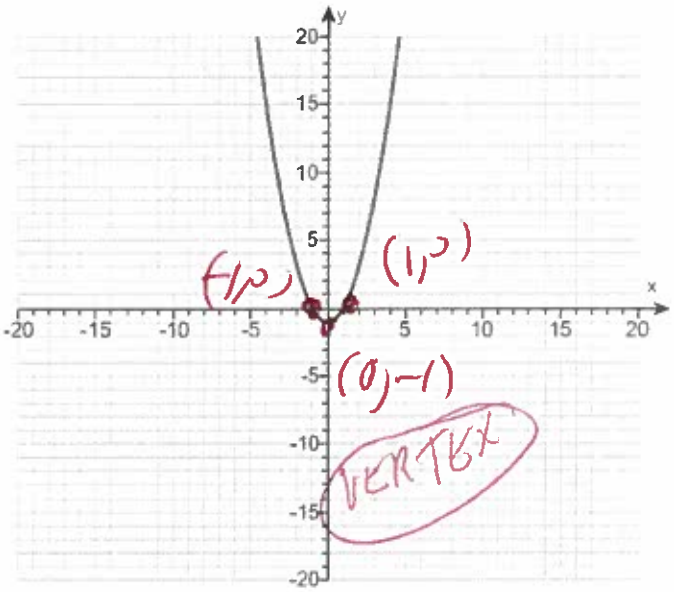
$f(1) = 0$

Answers (0, − 1)

B. The parabola opens upward.

A. The x-intercept(s) is(are) **(− 1,0),(1,0)** .
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

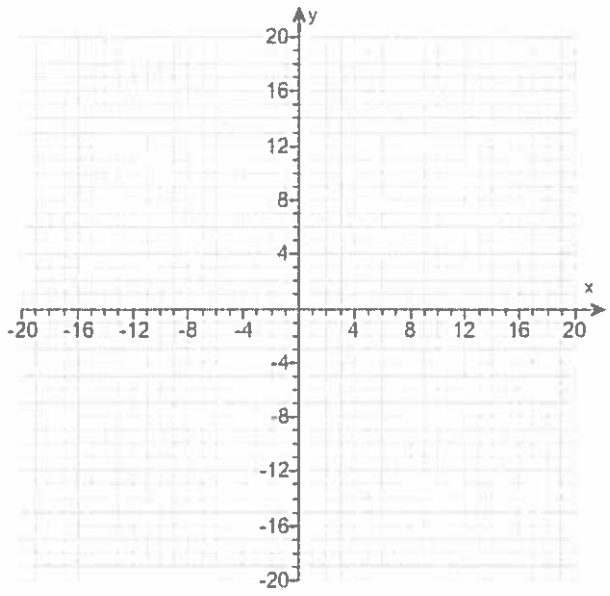
A. The y-intercept(s) is(are) **(0, − 1)** .
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)



147.

Find the vertex of the graph of the quadratic function. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.

$f(x) = -10x^2 + 20x$



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

Does the graph open upward or downward?

- A. The parabola opens downward.
- B. The parabola opens upward.

Find any x-intercepts of the graph.

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

- A. The x-intercept(s) is(are) [ ].
  (Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
- B. There is no x-intercept.

Find any y-intercepts of the graph.

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

- A. The y-intercept(s) is(are) [ ].
  (Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
- B. There is no y-intercept.

Use the graphing tool to graph the equation.

$-10x^2+20x=0$

$-10x(x-2)=0$

$-10x=0$ or $x-2=0$

$\frac{-10x}{-10}=\frac{0}{-10}$ or $x-2+2=0+2$

$x=0$ or $x=2$

$(0,0)$ or $(2,0)$ x intercepts

$f(x)=-10x^2+20x$

$a=-10,\ b=20,\ c=0$

Vertex $=\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$

$=\left(-\frac{(20)}{2(-10)}, f\left(\frac{(20)}{2(-10)}\right)\right)$

$=\left(\frac{-20}{-20}, f\left(\frac{20}{-20}\right)\right)$

$=(1, f(1))$

$(1, -10(1)^2+20(1))$

$(1, -10(1)(1)+20(1))$

$(1, -10(1)+20(1))$

$(1, -10+20)$

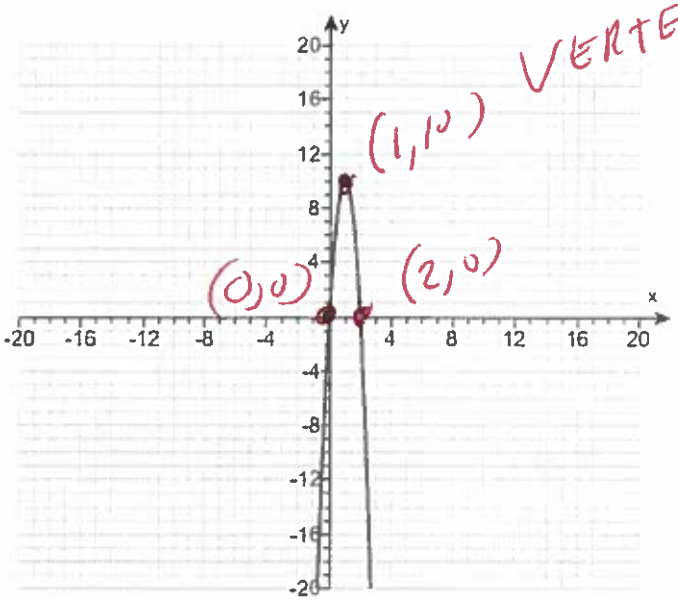
$(1, 10)$ Vertex

Answers (1,10)

A. The parabola opens downward.

A. The x-intercept(s) is(are) (0,0),(2,0) .
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

A. The y-intercept(s) is(are) (0,0) .
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)



148.

Graph the equation on paper, and then choose the correct graph.

$y = 2^x$

x	y
-1	1/2
0	1
1	2
2	4

Choose the correct graph on the right.

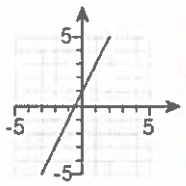
$y = 2^{-1} = \frac{1}{2}$

$y = 2^0 = 1$

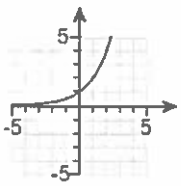
$y = 2^1 = 2$

$y = 2^2 = 2 \cdot 2 = 4$

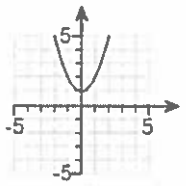
○ A.



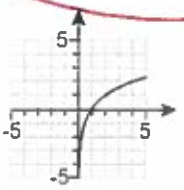
● B.



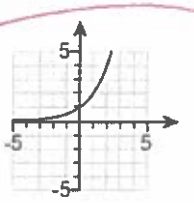
○ C.



○ D.



Answer:



B.

149. Cheese production in a country is currently growing at a rate of 2% per year. The equation $y = 8.4(1.02)^x$ models the cheese production in the country from 2003 to 2009. In this equation, y is the amount of cheese produced, in billions of pounds, and x represents the number of years after 2003.

2009 − 2003 = 6 2015 − 2003 = 12

a. Estimate the total cheese production in the country in 2009.
b. Assuming this equation continues to be valid in the future, use the equation to predict the total amount of cheese produced in the country in 2015.

a. The total cheese production in the country in 2009 was about ____ billions of pounds.
(Round to the nearest tenth as needed.)

b. The total cheese production in the country in 2015 will be about ____ billions of pounds.
(Round to the nearest tenth as needed.)

$y = 8.4(1.02)^x$
$y = 8.4(1.02)^6$
$y = 9.459764322$

Answers 9.5
10.7

150. Write the first five terms of each sequence whose general term is given.

$a_n = 3n + 5$

$a_n = 3n + 5$

$a_1 =$ ____ (Simplify your answer. Type an integer or fraction.)

$a_2 =$ ____ (Simplify your answer. Type an integer or fraction.)

$a_3 =$ ____ (Simplify your answer. Type an integer or fraction.)

$a_4 =$ ____ (Simplify your answer. Type an integer or fraction.)

$a_5 =$ ____ (Simplify your answer. Type an integer or fraction.)

Answers 8
11
14
17
20

$a_1 = 3(1) + 5 = 3 + 5 = 8$

$a_2 = 3(2) + 5 = 6 + 5 = 11$

$a_3 = 3(3) + 5 = 9 + 5 = 14$

$a_4 = 3(4) + 5 = 12 + 5 = 17$

$a_5 = 3(5) + 5 = 15 + 5 = 20$