Name_____ Date_____

Unit 1 - Chapter 15 Final Review

You randomly choose one game piece. (a) Find the number of ways the event can occur. (b) Find the favorable outcomes of the event.

1. Choosing green

a) 1

b) green

2. Choosing *not* yellow

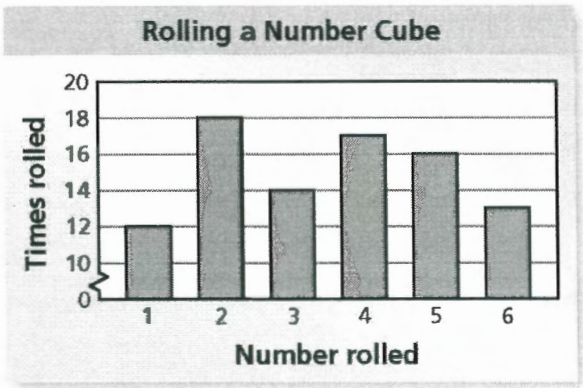
a) 5

b) red, blue, red, green, blue

3. Use the Fundamental Counting Principle to find the total number of different sunscreens possible.

Sunscreen	
SPF	10, 15, 30, 45, 50
Type	Lotion, Spray, Gel

15



Use the bar graph to find the experimental probability of the event.

4. Rolling a 1 or a 2

$\frac{1}{3}$

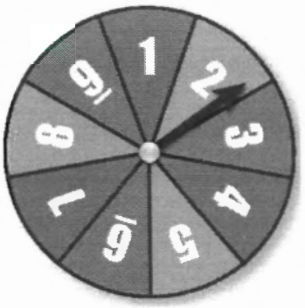
5. Rolling an odd number

$\frac{7}{15}$

6. *Not* rolling a 5

$\frac{37}{45}$

Use the spinner to find the theoretical probability of the event(s).



7. Spinning an even number

$\frac{4}{9}$

8. Spinning a 1 and then a 2

$\frac{1}{81}$

Tell whether the events are *independent* or *dependent*. Explain.

9) You spin a spinner twice.

First Spin: You spin a 2.
Second Spin: You spin an odd number.

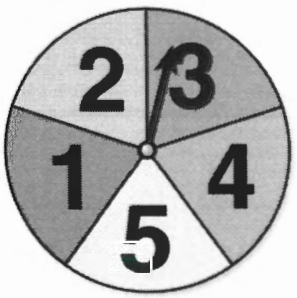
Independent.
The second spin is not affected by the first spin.

10) Your committee is voting on the leadership team.

First Vote: You vote for a president.
Second Vote: You vote for a vice president.

Dependent.
One person cannot be both president and vice-president.

You spin the spinner and flip a coin. Find the probability of the compound event.



11) Spinning an odd number and flipping heads

$\frac{3}{10}$

12) *Not* spinning a 5 and flipping tails

$\frac{2}{5}$

You randomly choose one of the tiles. Without replacing the first tile, you choose a second tile. Find the probability of the compound event.

13) Choosing a 6 and then a prime number

$\frac{2}{21}$

14) Choosing two odd numbers

$\frac{2}{7}$

You roll a number cube twice. Find the probability of the compound event.

15) Rolling two numbers whose sum is 2

$\frac{1}{36}$

16) Rolling an even number and then an odd number

$\frac{1}{4}$

Identify which one among the pair of groups is the population and which one is the sample.

17) All students in a school — Population

30 students in the school — Sample

18) 75 strawberries in the field — Sample

All the strawberries in the field — Population

19) You want to know the number of students in your school who read some of the newspaper at least once a week. You survey 30 random students that you meet in the hallway between classes.

a) What is the population of your survey?

All students at school

b) What is the sample of your survey?

30 random students that you meet in the hallway between classes

c) Is the sample biased or unbiased? Explain.

Unbiased. You are surveying at different times of the day and in the hallway rather than in your classrooms.

For each problem, which sample is better for making a prediction? Explain.

20)

Predict the number of residents in St. Lucie County who own a home.	
Sample A	A random sample of 100 residents in the county
Sample B	A random sample of 100 residents in the city of Fort Pierce

21)

Predict the number of people at a beach who are wearing sunscreen.	
Sample A	A random sample of 50 people at the beach
Sample B	A random sample of 5 people at the beach

Determine whether you would survey the population or a sample. Explain.

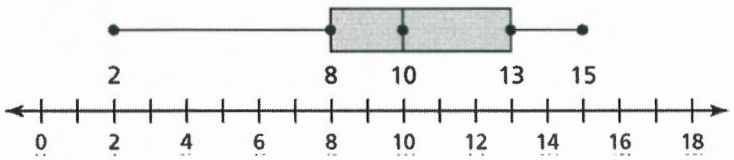
22) You want to know the average weight of the members of your family.

Population. You have access to all of the members of your family

23) You want to know the number of grocery stores in Florida that carry your favorite cereal.

Sample. It would not be easy to contact or visit every grocery store in the state of Florida

24) The box-and-whisker plot represents the numbers of cocoons in each butterfly tent.



a) What percent of the butterfly tents contain at most 10 cocoons?

50%.

b) Are the data more spread out below the first quartile or above the third quartile? Explain.

Below the lower quartile. There is a greater difference between the minimum and Q1.

c) Find and interpret the interquartile range of the data.

5; The middle 50% of the data has a range of 5.

d) What are the most appropriate measures to describe the center and variation of the distribution?

Median and IQR

Name Answers Date

Unit 2 - Chapter 10 Final Review

Write the product using exponents.

1) $\frac{1}{5} \cdot \frac{1}{5} \cdot \frac{1}{5} \cdot \frac{1}{5} \cdot \frac{1}{5}$ $= \left(\frac{1}{5}\right)^5$

2) $(-2) \cdot (-2) \cdot (-2)$ $= (-2)^3$

3) $y \cdot y \cdot y \cdot y \cdot y \cdot y$ $= y^6$

4) $4 \cdot 4 \cdot 4 \cdot c \cdot c$ $= 4^3 c^2$

Evaluate the expression.

5) -2^4 $= -16$

6) $(-3)^3$ $= -27$

7) $\frac{3^4}{3^5}$ $= \frac{1}{3}$

8) $(-2)^4$ $= 16$

Complete the following:

9) When you multiply powers with the same base, you add the exponents.

10) When you have exponents inside and outside the parenthesis, you multiply the exponents.

11) When you divide powers with the same base, you subtract exponents.

12) Evaluate: $542{,}897^0$ $= 1$

Simplify the expression. Write your answer as a power.

13) $(-1)^3 \cdot (-1)^2$ $= (-1)^5$

14) $(b^4)^2$ b^8

Simplify the expression.

15) $(4f)^3$ $= 64f^3$

16) $\left(-\frac{3}{8}t^2\right)^2$ $\frac{9}{64}t^4$

Simplify the expression. Write your answer as a power.

17) $\frac{(-2)^{10}}{(-2)^5} = (-2)^5$

18) $\frac{5^4 \cdot 5^9}{5^6} = 5^7$

19) $\frac{x^{14}}{x^4 \cdot x^2} = x^8$

20) $\frac{y^3}{y^{11}} \cdot \frac{y^{21}}{y^9} = y^4$

Simplify the expression. Write the expression using ***only positive exponents***.

21) $3^{-4} = \frac{1}{81}$

22) $\frac{8^3}{8^5} = \frac{1}{64}$

23) $5^{-12} \cdot 5^{12} = 1$

24) $\frac{1}{4^{-5}} \cdot \frac{1}{4^8} = \frac{1}{64}$

25) $6^{-1} \cdot 6^{-2} = \frac{1}{216}$

26) $\frac{2^6}{2^{-8} \cdot 2^{10}} = 16$

27) $8x^{-3} = \frac{8}{x^3}$

28) $5^{-3} \cdot m^6 \quad \frac{m^6}{125}$

29) $\frac{7p^5}{p^{-1}} = 7p^6$

30) $\frac{10t^{-5}}{t^{-2}} = \frac{10}{t^3}$

31) $\frac{15d^4}{3d^9} = \frac{5}{d^5}$

32) $6w^{-2} \cdot 4w^2 = 24$

33) $4c^{-5}c^2 \quad \frac{4}{c^3}$

34) $\frac{3x^2}{9x^5} = \frac{1}{3x^3}$

35) Is x^4x^5 equivalent to x^{20}? Explain. If not, what expression is equivalent to x^4x^5?

No. You're suppose to add exponents. $x^4x^5 = x^9$

Tell whether the number is written in scientific notation. Explain.

36) 0.3×10^4

No. The factor is not between 1 and 10.

37) 12×10^{-7}

No. The factor is not between 1 and 10.

Write the number in standard form.

38) -2.7×10^{-2} -0.027

39) 4×10^6

4,000,000

Write the number in scientific notation.

40) 0.0031

3.1×10^{-3}

41) 741,000

7.41×10^5

Order the numbers from least to greatest.

42) 3.9×10^7, 3.08×10^7, 3.88×10^7

3.08×10^7, 3.88×10^7, 3.9×10^7

43) 6.5×10^{-4}, 5.2×10^{-3}, 8.1×10^{-5}

8.1×10^{-5}, 6.5×10^{-4}, 5.2×10^{-3}

Evaluate the expression. Write your answer in scientific notation.

44) $(4.1 \times 10^3) + (3.7 \times 10^2)$

$.37 \times 10^3$

4.47×10^3

45) $(9.3 \times 10^{-3}) - (6.9 \times 10^{-4})$

$.69 \times 10^{-3}$

8.61×10^{-3}

46) $\left(1.2 \times 10^{-3}\right) \times \left(4 \times 10^{5}\right)$

4.8×10^{2}

47) $\left(8 \times 10^{-6}\right) \div 1.6$

5×10^{-6}

Name Answers Date

Unit 3 - Chapter 7 Final Review

Find the square root(s).

1. $-\sqrt{400} =$ -20

2. $\sqrt{2.25} =$ 1.5

3. $-\sqrt{\frac{36}{16}} = \frac{-6}{4} = -\frac{3}{2}$

4. $\pm\sqrt{\frac{98}{32}} = \pm\sqrt{\frac{49}{16}} = \pm\frac{7}{4}$

Evaluate the expression.

5. $3\sqrt{81} - \left(\sqrt{40}\right)^2$

$= 3(9) - 40$

$= 27 - 40$

$= -13$

6. $4 - 2\sqrt{\frac{289}{4}}$

$= 4 - 2\left(\frac{17}{2}\right)$

$= 4 - 17$

$= -13$

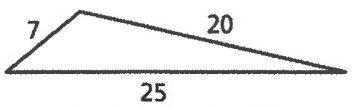
7. $-2\left(\sqrt{64} - 3\right)$

$-2(8-3)$

$-2(5)$

$= -10$

Prove whether the triangle with the given side lengths is a right triangle.

8. 

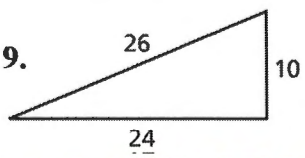
$a^2 + b^2 = c^2$

$7^2 + 20^2 = 25^2$

$49 + 400 \neq 625$

$449 \neq 625$

No.

9. 

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

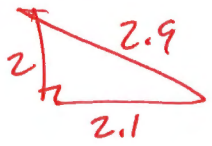
$10^2 + 24^2 = 26^2$

$100 + 576 = 676$

$676 = 676$

Yes

10. The side of the clip on a clip board appears to be a right triangle. The leg lengths are 2 millimeters and 2.1 millimeters and the hypotenuse is 2.9 millimeters. Is the side of the clip a right triangle?



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

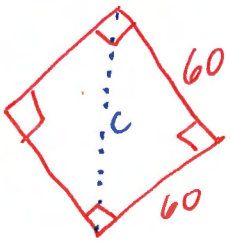
$2^2 + (2.1)^2 = (2.9)^2$

$4 + 4.41 = 8.41$

$8.41 = 8.41$

Yes.

11. On the Junior League baseball field, you run 60 feet to first base and then 60 feet to second base. You are out at second base and then run directly along the diagonal to home plate. Find the total distance that you ran. Round your answer to the nearest tenth. *(Hint: Draw a picture to help you solve).*



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

$60^2 + 60^2 = c^2$

$3600 + 3600 = c^2$

$7200 = c^2$ ← ok to use calculator on this one!

$c \approx 84.85281$

≈ 84.9 ft.

Tell whether a triangle with the given side lengths is a right triangle.

12. $8, \sqrt{54}, 11$ (a, b, c)

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

$8^2 + (\sqrt{54})^2 = 11^2$

$64 + 54 = 121$

$118 \neq 121$

No.

13. $\sqrt{39}, 8, 5$ (a, c, b)

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

$(\sqrt{39})^2 + 5^2 = 8^2$

$39 + 25 = 64$

$64 = 64$

Yes

14. 11 in, 60 in, 61 in

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

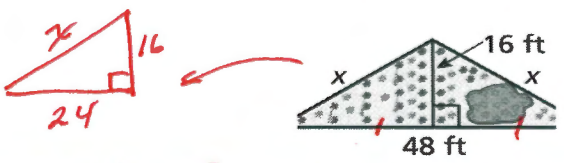
$11^2 + 60^2 = 61^2$

$121 + 3600 = 3721$

$3721 = 3721$

Yes.

15. You are creating a flower garden in the triangular shape shown. You purchase edging to go around the flower garden. The edging costs \$1.50 per foot. What is the cost of the edging? ***Round your lengths to the nearest whole number.***



$29 + 29 = 58$ ft

$58 \times 1.50 = \$87.$

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

$24^2 + 16^2 = x^2$

$576 + 256 = x^2$ ← ok to use calculator

$832 = x^2$

$x \approx 28.84\ldots$

$x \approx 29$ ft

Tell whether the rational number is a reasonable approximation of the square root.

16. $\frac{277}{160}, \sqrt{3}$

1.73125 → 1.73205

Yes.

17. $\frac{590}{160}, \sqrt{17}$

3.6875 → 4.1231

No

Classify the real number. Choose all that apply from the given list below. *(whole, natural, integer, rational, irrational)*

18. $-\sqrt{14}$ Irrational

19. $1.\overline{3}$ Rational

20. 2.375 Rational

21. $\sqrt{100} = 10$ Natural, whole integer, rational

Estimate the square root to the nearest (a) integer and (b) tenth.

22. $\sqrt{33}$

$\sqrt{25}$ ——— $\sqrt{36}$

$\sqrt{33}$

integer : 6 *10th:* 5.7

23. $\sqrt{630}$

integer : 25 *10th:* 25.2

24. $-\sqrt{8}$

integer : 3 *10th:* 2.8

25. $\sqrt{\frac{30}{2}} = \sqrt{15}$

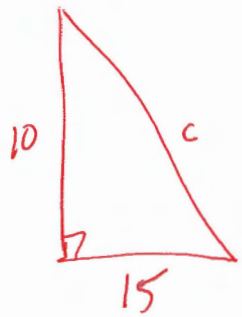
$\sqrt{9}$ ——— $\sqrt{16}$

$\sqrt{15}$

integer : 4 *10th:* 3.9

Find the missing value using the Pythagorean Theorem.

26. A swimming pool is in the shape of a right triangle. One leg has a length of 10 feet and one leg has a length of 15 feet. Find the length of the hypotenuse. *(Estimate the length to the nearest integer if necessary).*



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

$10^2 + 15^2 = c^2$

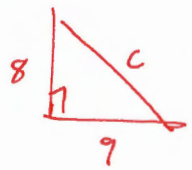
$100 + 225 = c^2$

$325 = c^2$

$\sqrt{325} = c$

$c \approx 18$ ft

27. You and a friend start off standing in the exact same point. Your friend walks a straight line 8 feet North and you walk a straight line 9 feet East. What is the approximate measure of the distance between you if you were to measure the direct route?



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

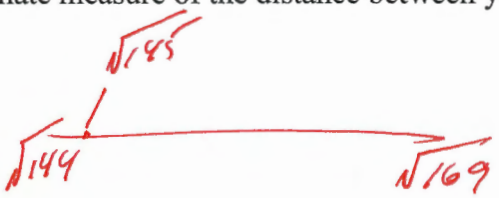
$8^2 + 9^2 = c^2$

$64 + 81 = c^2$

$145 = c^2$

$\sqrt{145} = c$

$12.1 = c$



$c \approx 12.1$ ft

28. Find the length of the missing leg of a right triangle.

a. $a = 5$ cm, $b =$ _____, $c = 13$ cm.

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

$5^2 + b^2 = 13^2$

$25 + b^2 = 169$

$-25 \quad -25$

$b^2 = 144$

$b = 12$ cm

b. $a =$ _____, $b = \sqrt{29}$ ft, $c = 15$ ft.

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

$a^2 + (\sqrt{29})^2 = 15^2$

$a^2 + 29 = 225$

$-29 \quad -29$

$a^2 = 196$

$a = 14$ ft

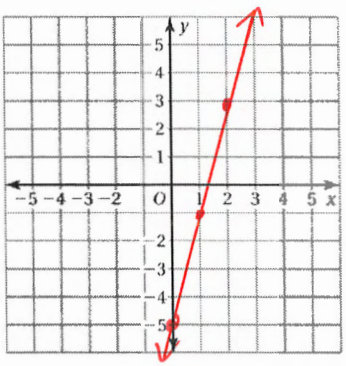
Name Answers Date

Unit 4 - Chapter 4 Final Review

Graph both linear equations on the coordinate plane on the right. Make sure you use an input/output table with at least 3 ordered pairs for each.

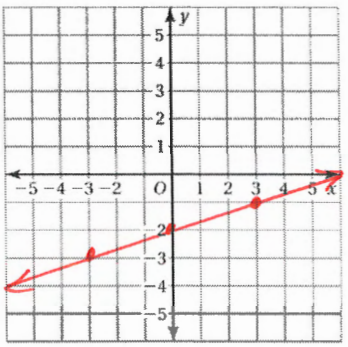
1) $y = 4x - 5$

x	y
-1	-9
0	-5
1	-1
2	3



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

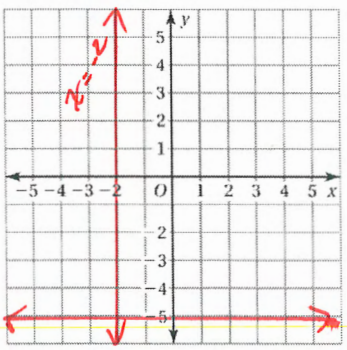
x	y
-3	-3
0	-2
3	-1



Graph both of the equations on the coordinate plane on the right. You may make an input/output table if you wish.

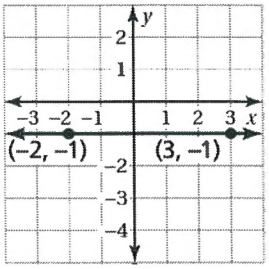
3) $y = -5$

4) $x = -2$



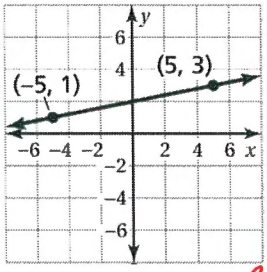
5) The slope of any line can be written as a ratio that represents its rise over its run.

Tell whether the slope of the line is positive, negative, zero, or undefined. Then find the slope if it exists.

6) 

Kind of slope: Zero

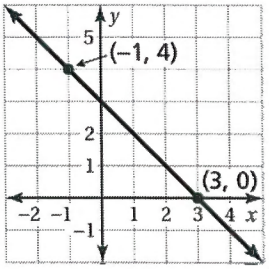
m = 0

7) 

$\frac{2}{10}$

Kind of slope: Positive

m = $\frac{1}{5}$

8) 

Kind of slope: Negative

m = −1

9) The slopes of parallel lines are the same.

10) Find the slope of the line that passes through the points. Write your answer in simplest form.

a) (-1, -4) and (1, 4) m = 4

$\frac{8}{2}$

b) (5, 8) and (5, -3) m = Undefined

$\frac{-11}{0}$

c) (9, -6) and (-4,-6) m = 0

$\frac{0}{-13}$

d) (1, 2) and (-3, 2) m = 0

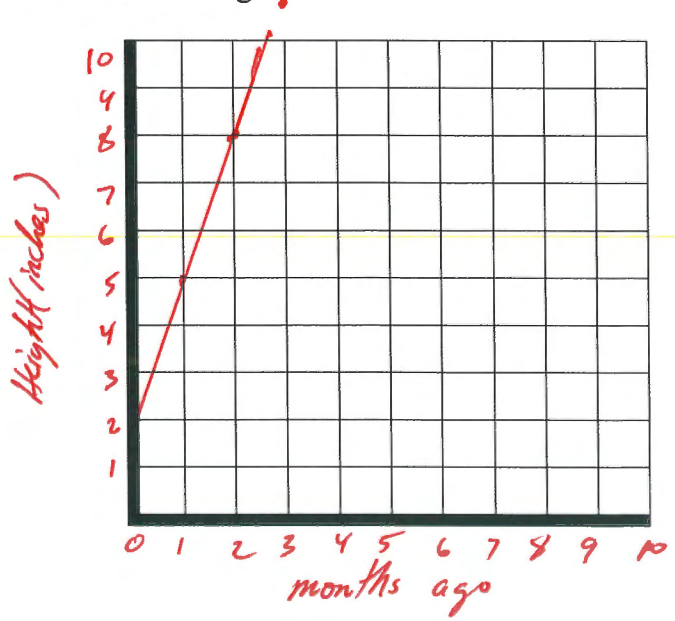
$\frac{0}{-4}$

11) A plant is 2 inches tall when you purchase it and grows 3 inches per month. Write an equation that represents the height y (in inches) of a plant that you purchased x months ago.

a) Equation: $y = 3x + 2$

b) Graph this equation and make sure to:
- Label you axis.
- Use at least 4 ordered pairs.

x	y
0	2
1	5
2	8
3	11



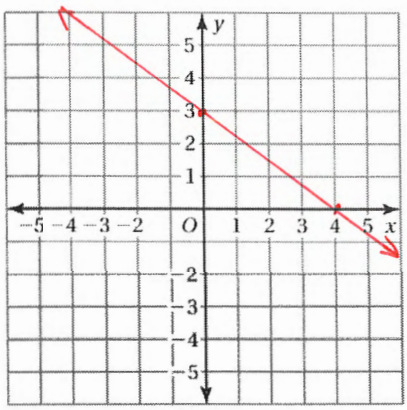
Graph each equation using the slope and the y-intercept only.

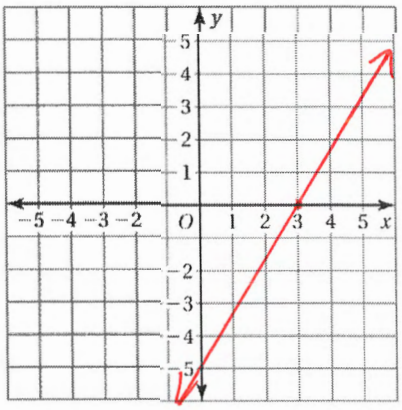
12) Graph $y = -\frac{3}{4}x + 3$

13) Change to slope intercept form and graph
$5x - 3y = 15$

$\frac{-3y}{-3} = \frac{-5x + 15}{-3}$

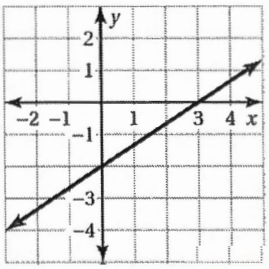
$y = \frac{5}{3}x - 5$





Identify the x-intercept and the y-intercept of the graph.

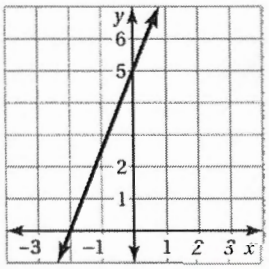
14)



x-intercept : (3, 0)

y-intercept : (0, -2)

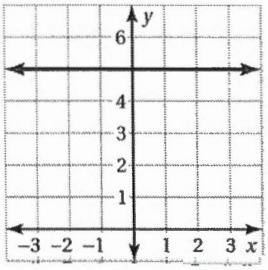
15)



x-intercept : (-2, 0)

y-intercept : (0, 5)

16)

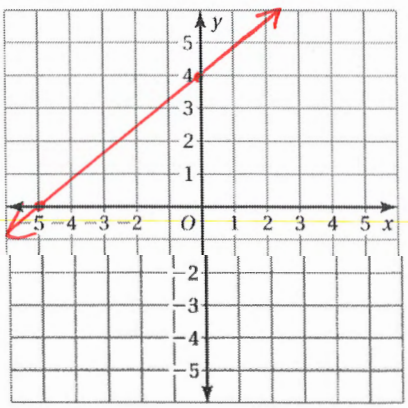


x-intercept : None

y-intercept : (0, 5)

Find the x-intercept and the y-intercept of each equation, and then graph it.

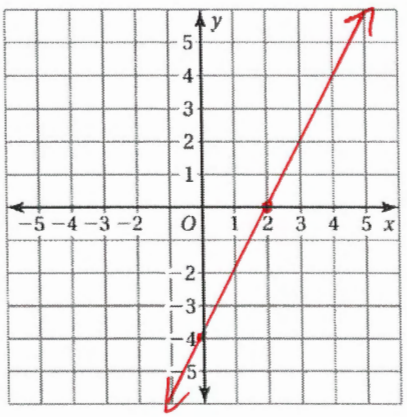
17) $-4x + 5y = 20$



x-intercept : (-5, 0)

y-intercept : (0, 4)

18) $6x - 3y = 12$



x-intercept : (2,0) y-intercept : (0,-4)

22) The total amount of fiber (in grams) in a package containing x apples and y oranges is given by the equation $5x + 10y = 110$.

a) Find and interpret the y-intercept.

y-int = (0, 11) This is the amount of fiber for 0 apples and 11 oranges.

b) Find and interpret the x-intercept.

x-int = (22, 0) This is the amount of fiber for 22 apples and 0 oranges

c) How many grams of fiber does an orange contain?

10 grams

d) How many grams of fiber does an apple contain?

5 grams

e) Is it possible for the package to contain 15 apples? Explain.

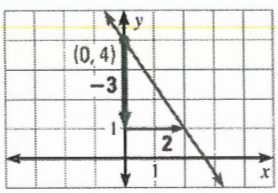
$5(15) + 10y = 110$

$75 + 10y = 110$

$10y = 35$

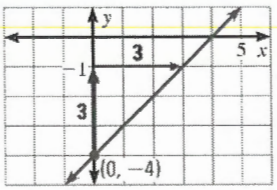
Write an equation of the line shown in slope-intercept form.

19)



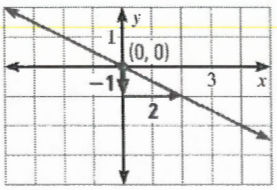
$y = -\frac{3}{2}x + 4$

20)



$y = x - 4$

21)



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

Write an equation of the line that passes through the following points in **slope-intercept** form.

22) $(-4, -1), (0, 5)$

$\frac{6}{4}$ $y = \frac{3}{2}x + 5$

23) $(0, -7), (1, 4)$

$\frac{11}{1}$ $y = 11x - 7$

24) $(0, -8), m = 5$

$y = 5x - 8$

25) $(7, 2), (-12, 2)$

$\frac{0}{-19} = 0$

$y = 0x + 2$

$y = 2$