Algebra 1 Final Review 2015 BOOK ANSWERS

Targets	Learning Targets	Ch 1 Problems
T 1-1	I can convert between algebraic expressions and verbal expressions.	1.1 Pg. 7 #11-30all

11. $4q$ **four times a number q**　**12.** $\frac{1}{8}y$ **one eighth of y**　**13.** $15 + r$ **15 plus r**　**14.** $w - 24$

15. $3x^2$　**16.** $\frac{r^4}{9}$　**17** $2a + 6$　**18.** $r^4 \cdot t^3$

14. w minus 24　**15. 3 times x squared**　**16. r to the fourth power divided by 9**

Write an algebraic expression for each verbal expression.　**17. 6 more than the product 2 times a**

19. x more than 7　$7 + x$

20. a number less 35　$n - 35$

18. the product of a number r raised to the fourth power and a number t cubed

21. 5 times a number　$5n$

22. one third of a number　$\frac{1}{3}n$

23. f divided by 10　$\frac{f}{10}$

24. the quotient of 45 and r　$\frac{45}{r}$

25. three times a number plus 16　$3n + 16$

26. 18 decreased by 3 times d　$18 - 3d$

27. k squared minus 11　$k^2 - 11$

28. 20 divided by t to the fifth power　$\frac{20}{t^5}$

29. GEOMETRY The volume of a cylinder is π times the radius r squared multiplied by the height h. Write an expression for the volume.　$\pi r^2 h$

30. FINANCIAL LITERACY Jocelyn makes x dollars per hour working at the grocery store and n dollars per hour babysitting. Write an expression that describes her earnings if she babysat for 25 hours and worked at the grocery store for 15 hours.　$25n + 15x$

Targets	Learning Targets	Ch 1 Problems
T 1-2	I can use dimensional analysis to convert between units.	Dimensional Analysis Worksheet
T 1-3	I can apply order of operations in expressions and equations.	1.2 Pg. 13 #39-54all

39. 4^2　**16**　　**40.** 12^3　**1728**　　**41.** 3^6　**729**

42. 11^5　**161,051**　　**43.** $(3 - 4^2)^2 + 8$　**177**　　**44.** $23 - 2(17 + 3^3)$　**−65**

45. $3[4 - 8 + 4^2(2 + 5)]$　**324**　　**46.** $\frac{2 \cdot 8^2 - 2^2 \cdot 8}{2 \cdot 8}$　**6**

47. $25 + \left[(16 - 3 \cdot 5) + \frac{12 + 3}{5}\right]$　**29**　　**48.** $7^3 - \frac{2}{3}(13 \cdot 6 + 9)4$　**111**

Evaluate each expression if $a = 8$, $b = 4$, and $c = 16$.

49. $a^2bc - b^2$　**4080**　　**50.** $\frac{c^2}{b^2} + \frac{b^2}{a^2}$　**$\frac{65}{4}$**　　**51.** $\frac{2b + 3c^2}{4a^2 - 2b}$　**$\frac{97}{31}$**

52. $\frac{3ab + c^2}{a}$　**44**　　**53.** $\left(\frac{a}{b}\right)^2 - \frac{c}{a - b}$　**0**　　**54.** $\frac{2a - b^2}{ab} + \frac{c - a}{b^2}$　**$\frac{1}{2}$**

T 1-4	I can recognize and apply the properties of numbers to simplify algebraic expressions.	1.3 Number Properties
Targets	**Learning Targets**	**Ch 2 Problems**
T 2-1	I can translate between sentences and equations.	2.1 Pg. 77 #1-20 all

1. Three times r less than 15 equals 6. $15 - 3r = 6$

2. The sum of q and four times t is equal to 29. $q + 4t = 29$

3 A number n squared plus 12 is the same as the quotient of p and 4. $n^2 + 12 = p \div 4$

4. Half of j minus 5 is the sum of k and 13. $\frac{1}{2}j - 5 = k + 13$

5. The sum of 8 and three times k equals the difference of 5 times k and 3. $8 + 3k = 5k - 3$

6. Three fourths of w plus 5 is one half of w increased by nine. $\frac{3}{4}w + 5 = \frac{1}{2}w + 9$

7. The quotient of 25 and t plus 6 is the same as twice t plus 1. $\frac{25}{t} + 6 = 2t + 1$

8. Thirty-two divided by y is equal to the product of three and y minus four. $\frac{32}{y} = 3y - 4$

9. **FINANCIAL LITERACY** Samuel has $1900 in the bank. He wishes to increase his account to a total of $2500 by depositing $30 per week from his paycheck. Write and solve an equation to find how many weeks he needs to reach his goal. $1900 + 30w = 2500; 20$

10. **CCSS MODELING** Miguel is earning extra money by painting houses. He charges a $200 fee plus $12 per can of paint needed to complete the job. Write and use an equation to find how many cans of paint he needs for a $260 job. $12c + 200 = 260; 5$

Translate each sentence into a formula.

11. The perimeter of a regular pentagon is 5 times the length of each side. $P = 5s$

12. The area of a circle is the product of π and the radius r squared. $A = \pi r^2$

13. Four times π times the radius squared is the surface area of a sphere. $4\pi r^2 = S$

14. One third the product of the length of the side squared and the height is the volume of a pyramid with a square base. $\frac{1}{3}s^2h = V$

15. Sample answer: The product of seven and m minus q is equal to 23.

16. Sample answer: Six plus the product of nine and k plus the product 5 and j is fifty-four.

17. Sample answer: Three times the sum of g and eight is the same as 4 times h minus 10.

18. Sample answer: Six times d squared minus the product of seven and f is identical to eight times d plus f squared.

19. Sample answer: A team of gymnasts competed in a regional meet. Each member of the team won 3 medals. There were a total of 45 medals won by the team. How many team members were there?

20. A store receives a shipment of notebooks that costs the store c dollars per notebook. To sell the notebooks, the store marks them up by 25%. If the store charges $3.75 for each notebook, what was the original cost of the notebook?

T 2-2	I can solve multi-step equations.	2.2 Pg. 86 #10-15all 2.3 Pg. 94 #1-10all

2.2

10. $\frac{t}{7} = -5$ **−35**

11. $\frac{a}{36} = \frac{4}{9}$ **16**

12. $\frac{2}{3}n = 10$ **15**

13. $\frac{8}{9} = \frac{4}{5}k$ **$\frac{10}{9}$ or $1\frac{1}{9}$**

14. $12 = \frac{x}{-3}$ **−36**

15. $-\frac{r}{4} = \frac{1}{7}$ **$-\frac{4}{7}$**

2.3

Solve each equation. Check your solution.

① $3m + 4 = -11$ **−5**

2. $12 = -7f - 9$ **−3**

3. $-3 = 2 + \frac{a}{11}$ **−55**

4. $\frac{3}{2}a - 8 = 11$ **$12\frac{2}{3}$**

5. $8 = \frac{x-5}{7}$ **61**

6. $\frac{c+1}{-3} = -21$ **62**

7. NUMBER THEORY Twelve decreased by twice a number equals −34. Write an equation for this situation and then find the number. **$12 - 2n = -34$; 23**

8. BASEBALL Among the career home run leaders for Major League Baseball, Hank Aaron has 175 fewer than twice the number that Dave Winfield has. Hank Aaron hit 755 home runs. Write an equation for this situation. How many home runs did Dave Winfield hit in his career? **$2h - 175 = 755$; 465 home runs**

Write an equation and solve each problem.

9. Find three consecutive odd integers with a sum of 75. **$n + (n+2) + (n+4) = 75$; 23, 25, 27**

10. Find three consecutive integers with a sum of −36. **$n + (n+1) + (n+2) = -36$; −13, −12, −11**

T 2-3	I can solve equations with variables on both sides	2.4 Pg. 100 #1-9all, 25-31o

Solve each equation. Check your solution.

1. $13x + 2 = 4x + 38$ **4**

2. $\frac{2}{3} + \frac{1}{6}q = \frac{5}{6}q + \frac{1}{3}$ **$\frac{1}{2}$**

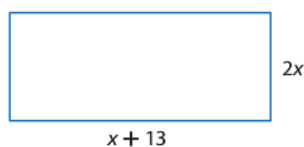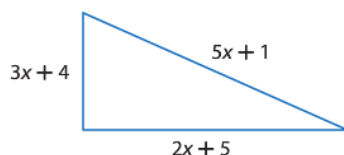**3.** $6(n + 4) = -18$ **−7**

4. $7 = -11 + 3(b + 5)$ **1**

5. $5 + 2(n + 1) = 2n$ **no solution**

6. $7 - 3r = r - 4(2 + r)$ **no solution**

7. $14v + 6 = 2(5 + 7v) - 4$ **all numbers**

8. $5h - 7 = 5(h - 2) + 3$ **all numbers**

9. MULTIPLE CHOICE Find the value of x so that the figures have the same perimeter. **A**

$3x + 4$ $5x + 1$ $2x + 5$ $2x$ $x + 13$

A 4 **B** 5 **C** 6 **D** 7

25. $2x = 2(x - 3)$ **no solution**

27. $-5(3 - q) + 4 = 5q - 11$ **all numbers**

29. $\frac{3}{5}f + 24 = 4 - \frac{1}{5}f$ **−25**

31. $\frac{2m}{5} = \frac{1}{3}(2m - 12)$ **15**

T 2-4	I can interpret and use a proportion to solve a problem.	2.6 Pg. 115 #15-19o, 30-36all 2.7 Pg. 122 #1-13all

SECTION 2.6

Solve each proportion. If necessary, round to the nearest hundredth.

15. $\frac{3}{8} = \frac{15}{a}$ **40**

16. $\frac{t}{2} = \frac{6}{12}$ **1**

17. $\frac{4}{9} = \frac{13}{q}$ **29.25**

18. $\frac{15}{35} = \frac{g}{7}$ **3**

19. $\frac{7}{10} = \frac{m}{14}$ **9.8**

20. $\frac{8}{13} = \frac{v}{21}$ **12.92**

30. **CAR WASH** The B-Clean Car Wash washed 128 cars in 3 hours. At that rate, how many cars can they wash in 8 hours? **about 341 cars**

31. **GEOGRAPHY** On a map of Florida, the distance between Jacksonville and Tallahassee is 2.6 centimeters. If 2 centimeters = 120 miles, what is the distance between the two cities? **156 mi**

32. **CCSS PRECISION** An artist used interlocking building blocks to build a scale model of Kennedy Space Center, Florida. In the model, 1 inch equals 1.67 feet of an actual space shuttle. The model is 110.3 inches tall. How tall is the actual space shuttle? Round to the nearest tenth. **184.2 ft**

33. **MENU** On Monday, a restaurant made $545 from selling 110 hamburgers. If they sold 53 hamburgers on Tuesday, how much did they make? **about $262.59**

Solve each proportion. If necessary, round to the nearest hundredth.

34. $\frac{6}{14} = \frac{7}{x-3}$ **19.33**

35. $\frac{7}{4} = \frac{f-4}{8}$ **18**

36. $\frac{3-y}{4} = \frac{1}{9}$ **2.56**

SECTION 2.7

State whether each percent of change is a percent of *increase* or a percent of *decrease*. Then find the percent of change. Round to the nearest whole percent.

1 original: 78
new: 125 **inc.;60%**

2. original: 41
new: 24 **dec.;41%**

3. original: 6 candles
new: 8 candles **inc.;33%**

4. original: 35 computers
new: 32 computers **dec.;9%**

5. GEOGRAPHY The distance from Phoenix to Tucson is 120 miles. The distance from Phoenix to Flagstaff is about 21.7% longer. To the nearest mile, what is the distance from Phoenix to Flagstaff? **146 mi**

Find the total price of each item.

6. dress: $22.50
sales tax: 7.5% **$24.19**

7. video game: $35.99
sales tax: 6.75% **$38.42**

8. PROM A limo costs $85 to rent for 3 hours plus a 7% sales tax. What is the total cost to rent a limo for 6 hours? **$181.90**

9. GAMES A computer game costs $49.95 plus a 6.25% sales tax. What is the total cost of the game? **$53.07**

Find the discounted price of each item.

10. guitar: $95.00
discount: 15% **$80.75**

11. DVD: $22.95
discount: 25% **$17.21**

12. SKATEBOARD A skateboard costs $99.99. If you have a coupon for 20% off, how much will you save? **$20**

13. CCSS MODELING Tickets to the county fair are $8 for an adult and $5 for a child. If you have a 15% discount card, how much will 2 adult tickets and 2 child tickets cost? **$22.10**

Targets	Ch 3 Learning Target	Ch 3 Problems
T 3-1	I can find the x and y intercepts and explains what they mean in real world situations.	3.1 Pg. 159 #5-8, 12, 21, 22, 23-28

6. 12, −24; The *x*-intercept 12 means that after 12 seconds, the scuba diver is at a depth of 0 meters, or at the surface. The *y*-intercept −24 means that at time 0, the scuba diver is at a depth of −24 meters, or 24 meters below sea level.

5. 25, −4; The *x*-intercept 25 means that after 25 minutes, the temperature is 0°F. The *y*-intercept −4 means that at time 0, the temperature is −4°F.

12. CCSS REASONING The equation $5x + 10y = 60$ represents the number of children x and adults y who can attend the rodeo for $60.

   a. Use the x- and y-intercepts to graph the equation. **See margin.**

   b. Describe what these values mean.
The *x*-intercept means that 12 children and 0 adults can attend for $60. The *y*-intercept means that 0 children and 6 adults can attend for $60.

Find the x- and y-intercepts of each linear function. Describe what the intercepts mean.
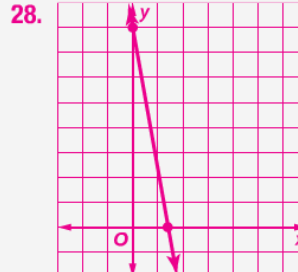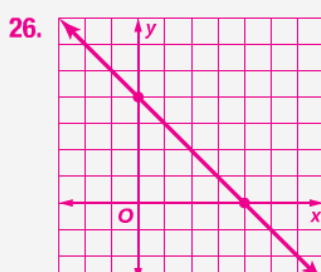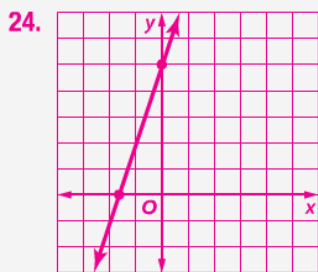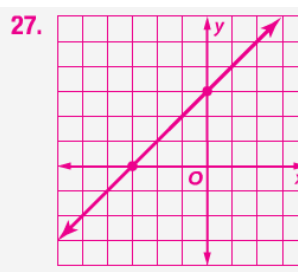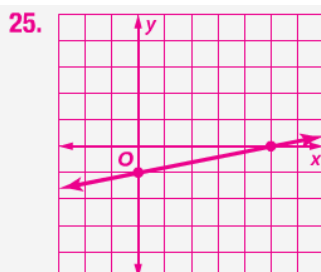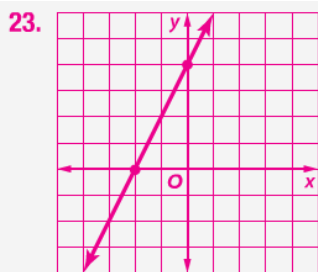
21. **Descent of Eagle**
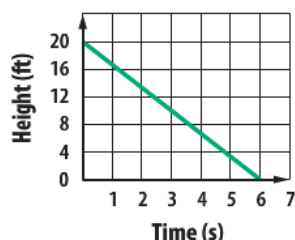
6, 20; The *x*-intercept represents the number of seconds that it takes the eagle to land. The *y*-intercept represents the initial height of the eagle.

22.

Eva's Distance from Home	
Time (min)	Distance (mi)
x	**y**
0	4
2	3
4	2
6	1
8	0

8, 4; The *x*-intercept 8 means that it took Eva 8 minutes to get home. The *y*-intercept 4 means that Eva was initially 4 miles from home.
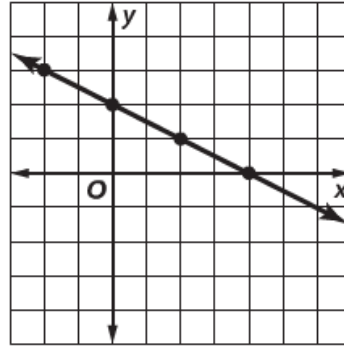
23.

25.

27.

24.

26.

28.

T 3-2	I can graph linear functions	3.1 Pg. 159 #9-11, 29-34

9.

x	$y = 2 - \dfrac{x}{2}$	y	(x, y)
−4	$y = 2 - \dfrac{(-4)}{2}$	4	(−4, 4)
−2	$y = 2 - \dfrac{(-2)}{2}$	3	(−2, 3)
0	$y = 2 - \dfrac{0}{2}$	2	(0, 2)
2	$y = 2 - \dfrac{2}{2}$	1	(2, 1)
4	$y = 2 - \dfrac{4}{2}$	0	(4, 0)

10.

x	−3 + 2y = −5	y	(x, y)
−2	−3 + 2y = −5	−1	(−2, −1)
−1	−3 + 2y = −5	−1	(−1, −1)
0	−3 + 2y = −5	−1	(0, −1)
1	−3 + 2y = −5	−1	(1, −1)
2	−3 + 2y = −5	−1	(2, −1)
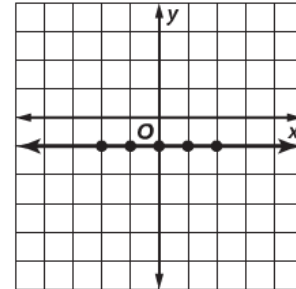
11.

x	y = 3	y	(x, y)
−2	y = 3	3	(−2, 3)
−1	y = 3	3	(−1, 3)
0	y = 3	3	(0, 3)
1	y = 3	3	(1, 3)
2	y = 3	3	(2, 3)
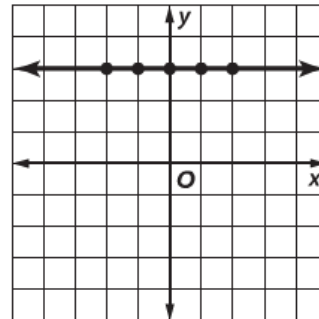
29.

x	y
−2	0
−2	1
−2	2
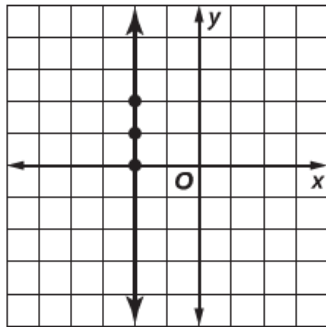
31.

x	y
−1	8
0	0
1	−8
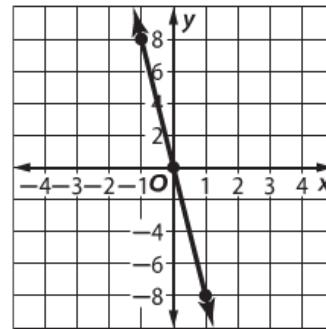
30.

x	y
0	−4
1	−4
2	−4
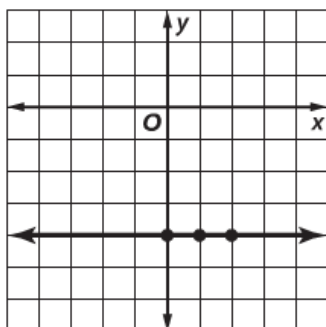
32.

x	y
0	0
1	3
2	6
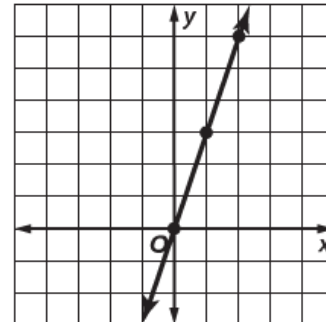
33.

x	y
0	8
1	7
2	6
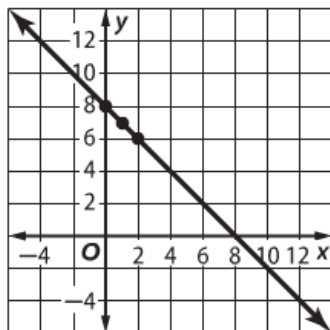
34.

x	y
0	10
1	9
2	8
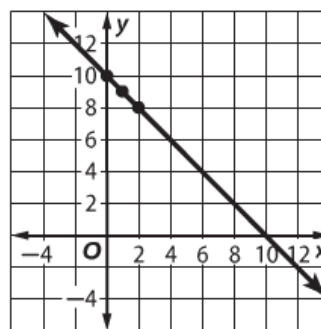
T 3-3	I can find the slope and the rate of change interpret it in the context of problem.	3.3 Pg. 177 # 1-13all

Find the rate of change represented in each table or graph.

1.

(3, 6)
(0, 2)

$\dfrac{4}{3}$

2. **4**

x	y
3	−6
5	2
7	10
9	18
11	26

3. CCSS **SENSE-MAKING** Refer to the graph at the right.

a. Find the rate of change of prices from 2006 to 2008. Explain the meaning of the rate of change.

b. Without calculating, find a two-year period that had a greater rate of change than 2006–2008. Explain.

c. Between which years would you guess the new stadium was built? Explain your reasoning. **Sample answer: 1998–2000; Ticket prices show a sharp increase.**

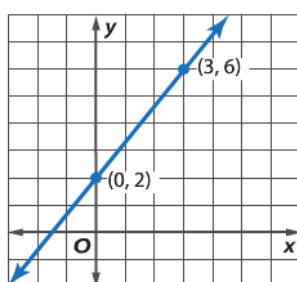**3a. 1.035; There was an average increase in ticket price of $1.035 per year.**
3b. Sample answer: 1998–2000; A steeper segment means a greater rate of change.
4. Yes; the rate of change is constant.

5.

x	8	12	16	20	24
y	7	5	3	0	−2

No; the rate of change is not constant.

Find the slope of the line that passes through each pair of points.

6. $(5, 3), (6, 9)$ **6**

7. $(-4, 3), (-2, 1)$ **−1**

8. $(6, -2), (8, 3)$ $\dfrac{5}{2}$

9. $(1, 10), (-8, 3)$ $\dfrac{7}{9}$

10. $(-3, 7), (-3, 4)$ **undefined**

11. $(5, 2), (-6, 2)$ **0**

Find the value of r so the line that passes through each pair of points has the given slope.

12. $(-4, r), (-8, 3), m = -5$ **−17**

13. $(5, 2), (-7, r), m = \dfrac{5}{6}$ **−8**

Targets	Ch 4 Learning Targets	Ch 4 Problems
T4-1	I can graph equations using given information	1.1 Pg. 220 #23-31o 4.3 Pg. 236 #27-33o GRAPH EACH!

4.1

23.

27.

25.

29.

31.
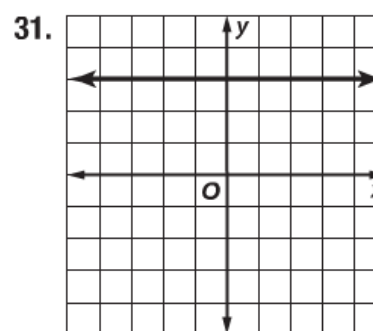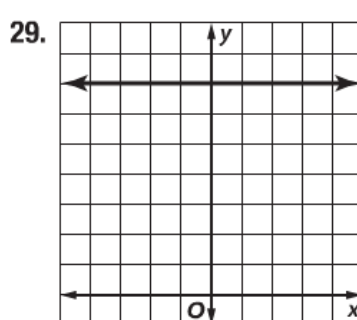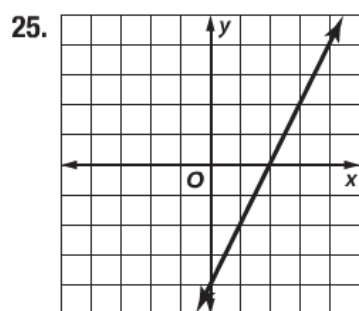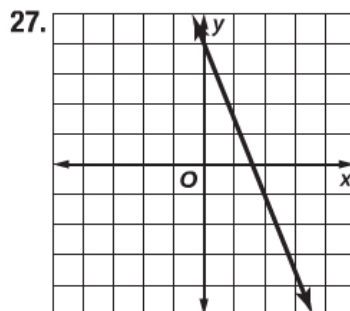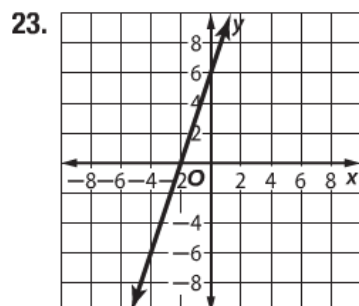
4.3

Write each equation in slope-intercept form.

27. $y - 6 = -2(x - 7)$ $y = -2x + 20$

28. $y - 11 = 3(x + 4)$ $y = 3x + 23$

29. $y + 5 = -6(x + 7)$ $y = -6x - 47$

30. $y - 1 = \frac{4}{5}(x + 5)$ $y = \frac{4}{5}x + 5$

31. $y + 2 = \frac{1}{6}(x - 4)$ $y = \frac{1}{6}x - \frac{8}{3}$

32. $y + 6 = -\frac{3}{4}(x + 8)$ $y = -\frac{3}{4}x - 12$

33. $y + 3 = -\frac{1}{3}(2x + 6)$ $y = -\frac{2}{3}x - 5$

34. $y + 4 = 3(3x + 3)$ $y = 9x + 5$

T4-2	I can write linear equations in slope intercept form, point slope form and standard form.	4.2 Pg. 229 #11-21o

Write an equation of the line that passes through the given point and has the given slope.

10. $(3, 1)$, slope 2 $y = 2x - 5$

11 $(-1, 4)$, slope -1 $y = -x + 3$

12. $(1, 0)$, slope 1 $y = x - 1$

13. $(7, 1)$, slope 8 $y = 8x - 55$

14. $(2, 5)$, slope -2 $y = -2x + 9$

15. $(2, 6)$, slope 2 $y = 2x + 2$

Write an equation of the line that passes through each pair of points.

16. $(9, -2), (4, 3)$ $y = -x + 7$

17. $(-2, 5), (5, -2)$ $y = -x + 3$

18. $(-5, 3), (0, -7)$ $y = -2x - 7$

19. $(3, 5), (2, -2)$ $y = 7x - 16$

20. $(-1, -3), (-2, 3)$ $y = -6x - 9$

21. $(-2, -4), (2, 4)$ $y = 2x$

T4-3	I can write linear equations that are parallel or perpendicular to another line.	4.4 Pg. 243 #11-16, 23-28, 33-38

Targets	Ch 6 Learning Targets	Ch 6 Retake Problems
T 6-1	I can solve systems of equations by graphing and determine the number of solutions. I can use this to solve real world situations.	6.1 pg. 339 #25, 26, 27-37o

25. SCHOOL DANCE Akira and Jen are competing to see who can sell the most tickets for the Winter Dance. On Monday, Akira sold 22 and then sold 30 per day after that. Jen sold 53 on Monday and then sold 20 per day after that.
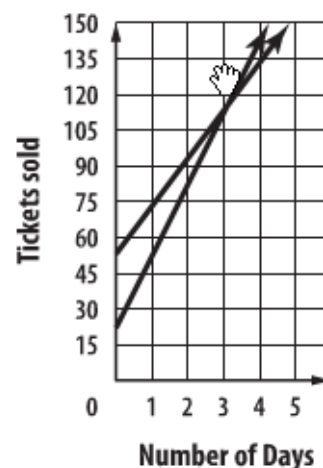
a. Write equations for the number of tickets each person has sold.
Akira: $y = 30x + 22$; Jen: $y = 20x + 53$

b. Graph each equation. **See Ch. 6 Answer Appendix.**

c. Solve the system of equations. Check and interpret your solution.
(3.1, 115); After about 3 days, Akira will have sold more tickets.

26. CCSS MODELING If x is the number of years since 2000 and y is the percent of people using travel services, the following equations represent the percent of people using travel agents and the percent of people using the Internet to plan travel.

Travel agents: $y = -2x + 30$ Internet: $y = 6x + 41$

a. Graph the system of equations. **See Ch. 6 Answer Appendix.**

b. Estimate the year travel agents and the Internet were used equally. **1999**

25b.

26a.
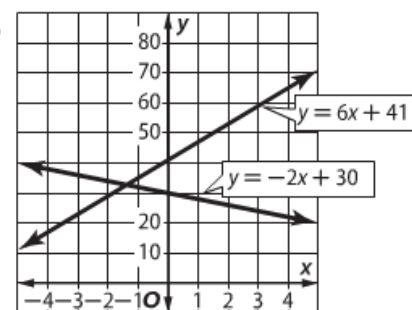
27 $y = \frac{1}{2}x$ **1 solution;**
$y = x + 2$ **(−4, −2)**

29. $y = 2x - 17$ **1 solution;**
$y = x - 10$ **(7, −3)**
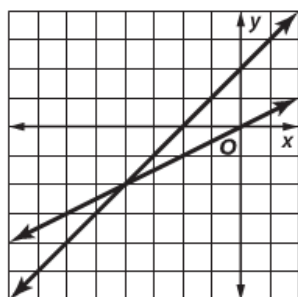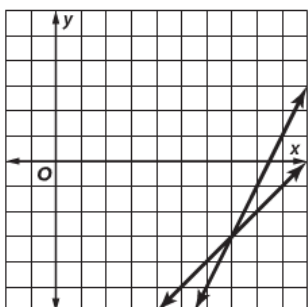
31. $3x + 5y = 30$ **1 solution;**
$3x + y = 18$ **(5, 3)**

33. $2x - 8y = 6$ **infinitely**
$x - 4y = 3$ **many**

35. $2x + 3y = 10$ **no solution**
$4x + 6y = 12$

37. $3y - x = -2$ **no solution**
$y - \frac{1}{3}x = 2$

31.

Algebra 1

T 6-2	I can solve systems of equations by using substitution and determine the number of solutions. I can use this to solve real world situations.	6.2 pg. 347 #8-16all Word Problem Worksheet

Use substitution to solve each system of equations.

8. $y = 5x + 1$
$4x + y = 10$ **(1, 6)**

9 $y = 4x + 5$
$2x + y = 17$ **(2, 13)**

10. $y = 3x - 34$
$y = 2x - 5$ **(29, 53)**

11. $y = 3x - 2$
$y = 2x - 5$ **(−3, −11)**

12. $2x + y = 3$
$4x + 4y = 8$ **(1, 1)**

13. $3x + 4y = -3$
$x + 2y = -1$ **(−1, 0)**

14. $y = -3x + 4$
$-6x - 2y = -8$
infinitely many

15. $-1 = 2x - y$
$8x - 4y = -4$
infinitely many

16. $x = y - 1$
$-x + y = -1$ **no solution**

T 6-3	I can solve systems of equations by using elimination and determine the number of solutions. I can use this to solve real world situations	6.4 pg. 360 #13-18all Word Problem Worksheet

13. $3x + 4y = 29$
$6x + 5y = 43$ **(3, 5)**

14. $8x + 3y = 4$
$-7x + 5y = -34$ **(2, −4)**

15. $8x + 3y = -7$
$7x + 2y = -3$ **(1, −5)**

16. $4x + 7y = -80$
$3x + 5y = -58$ **(−6, −8)**

17. $12x - 3y = -3$
$6x + y = 1$ **(0, 1)**

18. $-4x + 2y = 0$
$10x + 3y = 8$ $\left(\frac{1}{2}, 1\right)$

Targets	Ch 7 Learning Targets	Ch 7 Problems
T 7-1	I can multiply monomials using the properties of exponents and simplify expressions.	7.1 pg. 394 #7-19o 7.4 Pg. 417 #1-4all, 7-14all

7.1

7. $k(k^3)$ **k^4**

8. $m^4(m^2)$ **m^6**

9 $2q^2(9q^4)$ **$18q^6$**

10. $(5u^4v)(7u^4v^3)$ **$35u^8v^4$**

11. $[(3^2)^2]^2$ **3^8 or 6561**

12. $(xy^4)^6$ **x^6y^{24}**

13. $(4a^4b^9c)^2$ **$16a^8b^{18}c^2$**

14. $(-2f^2g^3h^2)^3$ **$-8f^6g^9h^6$**

15. $(-3p^5t^6)^4$ **$81p^{20}t^{24}$**

17. $(5x^2y)^2(2xy^3z)^3(4xyz)$ **$800x^8y^{12}z^4$**

18. $(-3d^2f^3g)^2[(-3d^2f)^3]^2$ **$6561d^{16}f^{12}g^2$**

19. $(-2g^3h)(-3gj^4)^2(-ghj)^2$ **$-18g^7h^3j^{10}$**

20. $(-7ab^4c)^3[(2a^2c)^2]^3$ **$-21,952a^{15}b^{12}c^9$**

7.2

1. 185,000,000 **1.85×10^8**

2. 1,902,500,000 **1.9025×10^9**

3. 0.000564 **5.64×10^{-4}**

4. 0.00000804 **8.04×10^{-6}**

7. 1.98×10^7 **19,800,000**

8. 4.052×10^6 **4,052,000**

9. 3.405×10^{-8} **0.00000003405**

10. 6.8×10^{-5} **0.000068**

11. 1.74×10^{15};
1,740,000,000,000,000

12. 3.54×10^6; 3,540,000

13. 4.7138×10^{-2}; 0.047138

14. 4.7524×10^{-4}; 0.00047524

T 7-2	I can divide monomials using the properties of exponents and simplify expressions.	7.2 Pg. 402 #1-14all, skip 10,

1. $\dfrac{t^5 u^4}{t^2 u}$ $t^3 u^3$

2. $\dfrac{a^6 b^4 c^{10}}{a^3 b^2 c}$ $a^3 b^2 c^9$

3 $\dfrac{m^6 r^5 p^3}{m^5 r^2 p^3}$ mr^3

4. $\dfrac{b^4 c^6 f^8}{b^4 c^3 f^5}$ $c^3 f^3$

5. $\dfrac{g^8 h^2 m}{hg^7}$ ghm

6. $\dfrac{r^4 t^7 v^2}{t^7 v^2}$ r^4

7. $\dfrac{x^3 y^2 z^6}{z^5 x^2 y}$ xyz

8. $\dfrac{n^4 q^4 w^6}{q^2 n^3 w}$ $nq^2 w^5$

9. $\left(\dfrac{2a^3 b^5}{3}\right)^2$ $\dfrac{4a^6 b^{10}}{9}$

10. $\dfrac{r^3 v^{-2}}{t^{-7}}$ $\dfrac{r^3 t^7}{v^2}$

11. $\left(\dfrac{2c^3 d^5}{5g^2}\right)^5$ $\dfrac{32 c^{15} d^{25}}{3125 g^{10}}$

12. $\left(-\dfrac{3xy^4 z^2}{x^3 yz^4}\right)^0$ 1

13. $\left(\dfrac{3f^4 gh^4}{32 f^3 g^4 h}\right)^0$ 1

14. $\dfrac{4r^2 v^0 t^5}{2rt^3}$ $2rt^2$

T 7-3	I can use all properties of exponents to solve exponents.	7.2 Pg. 403 #31-41o, 47-56all

31. $\left(-\dfrac{5f^9 g^4 h^2}{fg^2 h^3}\right)^0$ 1

32. $\dfrac{p^{12} t^7 r^2}{p^2 t^7 r}$ $p^{10} r$

33. $\dfrac{p^4 t^{-3}}{r^{-2}}$ $\dfrac{p^4 r^2}{t^3}$

34. $-\dfrac{5c^2 d^5}{8cd^5 f^0}$ $-\dfrac{5c}{8}$

35. $\dfrac{-2f^3 g^2 h^0}{8f^2 g^2}$ $\dfrac{-f}{4}$

36. $\dfrac{12m^{-4} p^2}{-15m^3 p^{-9}}$ $\dfrac{4p^{11}}{-5m^7}$

37. $\dfrac{k^4 m^3 p^2}{k^2 m^2}$ $k^2 mp^2$

38. $\dfrac{14 f^{-3} g^2 h^{-7}}{21 k^3}$ $\dfrac{2g^2}{3f^3 h^7 k^3}$

39. $\dfrac{39 t^4 uv^{-2}}{13 t^{-3} u^7}$ $\dfrac{3t^7}{u^6 v^2}$ 43

40. $\left(\dfrac{a^{-2} b^4 c^5}{a^{-4} b^{-4} c^3}\right)^2$ $a^4 b^{16} c^4$

41. $\dfrac{r^3 t^{-1} x^{-5}}{tx^5}$ $\dfrac{r^3}{t^2 x^{10}}$

42. $\dfrac{g^0 h^7 j^{-2}}{g^{-5} h^0 j^{-2}}$ $g^5 h^7$

T 7-4	I can evaluate, rewrite and solve expressions involving rational exponents	7.3 Pg. 410 #1-15all

Write each expression in radical form, or write each radical in exponential form.

1. $12^{\frac{1}{2}}$ **$\sqrt{12}$**

2. $3x^{\frac{1}{2}}$ **$3\sqrt{x}$**

3. $\sqrt{33}$ **$33^{\frac{1}{2}}$**

4. $\sqrt{8n}$ **$(8n)^{\frac{1}{2}}$**

Simplify.

5. $\sqrt[3]{512}$ **8**

6. $\sqrt[5]{243}$ **3**

7. $343^{\frac{1}{3}}$ **7**

8. $\left(\frac{1}{16}\right)^{\frac{1}{4}}$ **$\frac{1}{2}$**

9. $343^{\frac{2}{3}}$ **49**

10. $81^{\frac{3}{4}}$ **27**

⑪ $216^{\frac{4}{3}}$ **1296**

12. $\left(\frac{1}{49}\right)^{\frac{3}{2}}$ **$\frac{1}{343}$**

Solve each equation.

13. $8^x = 4096$ **4**

14. $3^{3x+1} = 81$ **1**

15. $4^{x-3} = 32$ **5.5**

Targets	Ch 8 Learning Targets	Ch 8 Problems
T 8-1	I can write polynomials in standard form, name leading coefficient, name degree and perform addition and subtraction on polynomials.	Pg. 468 #1-18all, 52, 53

Determine whether each expression is a polynomial. If it is a polynomial, find the degree and determine whether it is a monomial, binomial, or trinomial.

1. $7ab + 6b^2 - 2a^3$ **yes; 3; trinomial**

2. $2y - 5 + 3y^2$ **yes; 2; trinomial**

3. $3x^2$ **yes; 2; monomial**

4. $\frac{4m}{3p}$ **No; a monomial cannot have a variable in the denominator.**

5. $5m^2p^3 + 6$ **yes; 5; binomial**

6. $5q^{-4} + 6q$ **No; $5q^{-4} = \frac{5}{q^4}$, and a monomial cannot have a variable in the denominator.**

Write each polynomial in standard form. Identify the leading coefficient.

7. $2x^5 - 12 + 3x$ **$2x^5 + 3x - 12$; 2**

8. $-4d^4 + 1 - d^2$ **$-4d^4 - d^2 + 1$; -4**

9. $4z - 2z^2 - 5z^4$ **$-5z^4 - 2z^2 + 4z$; -5**

10. $2a + 4a^3 - 5a^2 - 1$ **$4a^3 - 5a^2 + 2a - 1$; 4**

Find each sum or difference. **13. $-a^2 + 6a - 3$** **15. $-8z^3 - 3z^2 - 2z + 13$** **16. $-2d^2 + 6d - 20$**

11. $(6x^3 - 4) + (-2x^3 + 9)$ **$4x^3 + 5$**

12. $(g^3 - 2g^2 + 5g + 6) - (g^2 + 2g)$ **$g^3 - 3g^2 + 3g + 6$**

⑬ $(4 + 2a^2 - 2a) - (3a^2 - 8a + 7)$

14. $(8y - 4y^2) + (3y - 9y^2)$ **$-13y^2 + 11y$**

15. $(-4z^3 - 2z + 8) - (4z^3 + 3z^2 - 5)$

16. $(-3d^2 - 8 + 2d) + (4d - 12 + d^2)$

17. $(y + 5) + (2y + 4y^2 - 2)$ **$4y^2 + 3y + 3$**

18. $(3n^3 - 5n + n^2) - (-8n^2 + 3n^3)$ **$9n^2 - 5n$**

52. CCSS **REASONING** The perimeter of the triangle can be represented by the expression $3x^2 - 7x + 2$. Write a polynomial that represents the measure of the third side. **4x**

$x^2 - x - 4$

$2x^2 - 10x + 6$
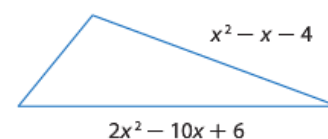
53. **GEOMETRY** Consider the rectangle.

$4x^2 + 2x - 1$

    a. What does $(4x^2 + 2x - 1)(2x^2 - x + 3)$ represent?

    b. What does $2(4x^2 + 2x - 1) + 2(2x^2 - x + 3)$ represent?
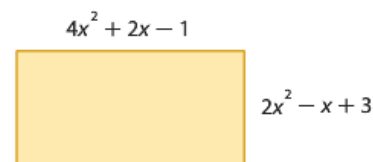
    53a. the area of the rectangle   **53b. the perimeter of the rectangle**

$2x^2 - x + 3$

T 8-2	I can multiply polynomials using the distributive & double distributive method.	Pg. 474 #1-15o Pg. 483 #1-7o

Pg. 474

Find each product.   **5. $14a^5 b^3 + 2a^6 b^2 - 4a^2 b$**

1. $5w(-3w^2 + 2w - 4)$ **2.** $6g^2(3g^3 + 4g^2 + 10g - 1)$

3. $4km^2(8km^2 + 2k^2 m + 5k)$ **4.** $-3p^4 r^3(2p^2 r^4 - 6p^6 r^3 - 5)$ $-6p^6 r^7 + 18p^{10} r^6 + 15p^4 r^3$

⑤ $2ab(7a^4 b^2 + a^5 b - 2a)$ **6.** $c^2 d^3(5cd^7 - 3c^3 d^2 - 4d^3)$ $5c^3 d^{10} - 3c^5 d^5 - 4c^2 d^6$

Simplify each expression.   **7. $4t^3 + 15t^2 - 8t + 4$**

7. $t(4t^2 + 15t + 4) - 4(3t - 1)$ **8.** $x(3x^2 + 4) + 2(7x - 3)$ $3x^3 + 18x - 6$

9. $-2d(d^3 c^2 - 4dc^2 + 2d^2 c) + c^2(dc^2 - 3d^4)$ $-5d^4 c^2 + 8d^2 c^2 - 4d^3 c + dc^4$

10. $-5w^2(8w^2 x - 11wx^2) + 6x(9wx^4 - 4w - 3x^2)$ $-40w^4 x + 55w^3 x^2 + 54wx^5 - 24wx - 18x^3$

11. **GRIDDED RESPONSE** Marlene is buying a new plasma television. The height of the screen of the television is one half the width plus 5 inches. The width is 30 inches. Find the height of the screen in inches. **20**

Solve each equation.

12. $-6(11 - 2c) = 7(-2 - 2c)$ **2**   **13.** $t(2t + 3) + 20 = 2t(t - 3)$ $-\dfrac{20}{9}$

14. $-2(w + 1) + w = 7 - 4w$ **3**   **15.** $3(y - 2) + 2y = 4y + 14$ **20**

Pg. 483

Find each product.

1. $(x + 5)(x + 2)$ **2.** $(y - 2)(y + 4)$ $y^2 + 2y - 8$ **3.** $(b - 7)(b + 3)$ $b^2 - 4b - 21$
$x^2 + 7x + 10$

4. $(4n + 3)(n + 9)$ **5.** $(8h - 1)(2h - 3)$ **6.** $(2a + 9)(5a - 6)$ $10a^2 + 33a - 54$
$4n^2 + 39n + 27$ $16h^2 - 26h + 3$

|← 20 in →|

7. **FRAME** Hugo is designing a frame as shown at the right. The frame has a width of x inches all the way around. Write an expression that represents the total area of the picture and frame. $4x^2 + 72x + 320$

T 8-3	I can multiply polynomials using FOIL method.	Pg. 483 #13-23o Pg. 488 #1-7o

Pg. 483

Find each product. **12.** $3c^2 + 4c - 15$ **13.** $2g^2 + 15g - 50$ **15.** $24x^2 + 18x + 3$

12. $(3c - 5)(c + 3)$

13. $(g + 10)(2g - 5)$

14. $(6a + 5)(5a + 3)$ $30a^2 + 43a + 15$

(15) $(4x + 1)(6x + 3)$

16. $(5y - 4)(3y - 1)$

17. $(6d - 5)(4d - 7)$

18. $(3m + 5)(2m + 3)$

19. $(7n - 6)(7n - 6)$

20. $(12t - 5)(12t + 5)$ $144t^2 - 25$

21. $(5r + 7)(5r - 7)$
  $25r^2 - 49$

22. $(8w + 4x)(5w - 6x)$
  $40w^2 - 28wx - 24x^2$

23. $(11z - 5y)(3z + 2y)$
  $33z^2 + 7yz - 10y^2$

Pg. 488

Find each product. **4.** $9m^2 - 24m + 16$ **5.** $g^2 - 8gh + 16h^2$ **6.** $9c^2 + 36cd + 36d^2$

1. $(x + 5)^2$ $x^2 + 10x + 25$

2. $(11 - a)^2$ $121 - 22a + a^2$

(3) $(2x + 7y)^2$ $4x^2 + 28xy + 49y^2$

4. $(3m - 4)(3m - 4)$

5. $(g - 4h)(g - 4h)$

6. $(3c + 6d)^2$

7. GENETICS The color of a Labrador retriever's fur is genetic. Dark genes D are dominant over yellow genes y. A dog with genes DD or Dy will have dark fur. A dog with genes yy will have yellow fur. Pepper's genes for fur color are Dy, and Ramiro's are yy.

	D	y
D	DD	Dy
y	Dy	yy

a. Write an expression for the possible fur colors of Pepper's and Ramiro's puppies.

b. What is the probability that a puppy will have yellow fur? **50%** $0.5Dy + 0.5y^2$

T 8-4	I can factor polynomials using the GCF (distributive property).	8.5 Pg. 498 #15-26all

Use the Distributive Property to factor each polynomial.

15. $16t - 40y$ $8(2t - 5y)$

16. $30v + 50x$ $10(3v + 5x)$

17. $2k^2 + 4k$ $2k(k + 2)$

18. $5z^2 + 10z$ $5z(z + 2)$

19. $4a^2b^2 + 2a^2b - 10ab^2$
  $2ab(2ab + a - 5b)$

20. $5c^2v - 15c^2v^2 + 5c^2v^3$ $5c^2v(1 - 3v + v^2)$

3 Factor each polynomial. **25.** $(9q - 10)(5p - 3)$ **35.** $3cd(9d - 6cd + 1)$ **37.** $2(8u - 15)(3t + 2)$

(21) $fg - 5g + 4f - 20$ $(g + 4)(f - 5)$

22. $a^2 - 4a - 24 + 6a$ $(a - 4)(a + 6)$

23. $hj - 2h + 5j - 10$ $(h + 5)(j - 2)$

24. $xy - 2x - 2 + y$ $(x + 1)(y - 2)$

25. $45pq - 27q - 50p + 30$

26. $24ty - 18t + 4y - 3$ $(6t + 1)(4y - 3)$

T 8-5	I can factor trinomials and binomials with a leading coefficient of one using any method.	8.6 Pg. 507 #12-19all Also complete the following problems: $x^2 - 16 \qquad m^2 - 256$ $c^2 - 100$

Factor each polynomial. Confirm your answers using a graphing calculator.

12. $x^2 + 17x + 42$ **$(x + 3)(x + 14)$**

13. $y^2 - 17y + 72$ **$(y - 9)(y - 8)$**

14. $a^2 + 8a - 48$ **$(a - 4)(a + 12)$**

15. $n^2 - 2n - 35$ **$(n - 7)(n + 5)$**

16. $44 + 15h + h^2$ **$(h + 4)(h + 11)$**

17. $40 - 22x + x^2$ **$(x - 2)(x - 20)$**

18. $-24 - 10x + x^2$ **$(x + 2)(x - 12)$**

19. $-42 - m + m^2$ **$(m + 6)(m - 7)$**

T 8-6	I can factor trinomials and binomials with a leading coefficient greater than one using any method	8.7 Pg. 513 #10-21all Also complete the following problems: $4b^2 - 25 \qquad 25g^2 - 9$ $81y^2 - 16$

Factor each polynomial, if possible. If the polynomial cannot be factored using integers, write *prime*.

10. $5x^2 + 34x + 24$

11 $2x^2 + 19x + 24$

12. $4x^2 + 22x + 10$ **$2(2x + 1)(x + 5)$**

13. $4x^2 + 38x + 70$

14. $2x^2 - 3x - 9$

15. $4x^2 - 13x + 10$ **$(4x - 5)(x - 2)$**

16. $2x^2 + 3x + 6$ **prime**

17. $5x^2 + 3x + 4$ **prime**

18. $12x^2 + 69x + 45$ **$3(4x + 3)(x + 5)$**

19. $4x^2 - 5x + 7$ **prime**

20. $5x^2 + 23x + 24$ **$(5x + 8)(x + 3)$**

21. $3x^2 - 8x + 15$ **prime**

T 8-7	I can use factoring and the zero product property to solve quadratic equations.	Solve by Factoring Retake Worksheet