Algebra 1 – Chapter 6
Lesson 1

Evaluate the expression.

1. $(-7)^0$

1

2. 4^0

1

3. 5^{-4}

$\frac{1}{5^4} = \frac{1}{625}$

4. $(-2)^{-5}$

$\frac{1}{-2^5} = -\frac{1}{32}$

5. $\frac{2^{-4}}{4^0}$

$\frac{2^{-4}}{1} = 2^{-4} = \frac{1}{2^4} = \frac{1}{16}$

6. $\frac{(-8)^{-2}}{3^{-4}}$

$\frac{3^4}{-8^2} = -\frac{81}{64}$

Simplify the expression. Write your answer using only positive exponents

7. x^{-7}

$\frac{1}{x^7}$

8. $15c^{-8}d^0$

$\frac{15}{c^8}$

9. $\frac{p^{-8}}{7^{-2}q^{-9}}$

$\frac{7^2 q^9}{p^8} = \frac{49q^9}{p^8}$

10. $\frac{(-6)^8}{(-6)^5}$

-6^3

-216

11. $4^{-5} \cdot 4^5$

4^{-5+5}

$4^0 = 1$

12. $(s^{-5})^3$

$s^{-15} = \frac{1}{s^{15}}$

13. $-7 \cdot (-7)^{-4}$

-7^{1-4}

$-7^{-3} = -\frac{1}{7^3}$

$-\frac{1}{343}$

14. $\frac{x^5}{x^4} \cdot x$

$x^{5-4} \cdot x$

$x \cdot x$

x^2

15. $\frac{z^8 \cdot z^2}{z^5}$

$\frac{z^{8+2}}{z^5} = \frac{z^{10}}{z^5} = z^{10-5}$

z^5

16. $(4x)^{-4}$

$\frac{1}{(4x)^4} =$

$\frac{1}{256x^4}$

17. $(-5p^3)^3$

$-5^3 p^{3 \cdot 3}$

$-125p^9$

18. $\left(\frac{1}{2r^6}\right)^{-6}$

$\frac{(2r^6)^6}{1^6} = 64r^{36}$

Algebra 1 – Chapter 6

Lesson 2

Rewrite the expression in rational exponent form.

1. $\sqrt{10}$

$10^{\frac{1}{2}}$

2. $\sqrt[5]{34}$

$34^{1/5}$

3. $(\sqrt[5]{8})^4$

$8^{4/5}$

4. $(\sqrt[3]{-21})^6$

$-21^{6/3} = -21^2$

Rewrite the expression in radical form.

5. $15^{1/3}$

$\sqrt[3]{15}$

6. $140^{1/8}$

$\sqrt[8]{140}$

7. $(-4)^{2/7}$

$(\sqrt[7]{-4})^2$

8. $9^{5/2}$

$(\sqrt{9})^5$

Find the indicated real *n*th root(s) of *a*.

9. n = 2, a = 36

$x^2 = 36$

$\boxed{x = 6}$

10. n = 4, a = 81

$x^4 = 81$

$\boxed{x = 3}$

11. n = 3, a = 1000

$x^3 = 1000$

$x = 10$

12. n = 9, a = -512

$x^9 = -512$

$x = -2$

Evaluate the expression.

Algebra 1 – Chapter 6
Lesson 2

13. $\sqrt[3]{-216}$

-6

14. $-\sqrt[5]{1024}$

-4

15. $(-64)^{1/2}$

No Sol
Can't have square root of a negative

16. $125^{2/3}$

$(125^{1/3})^2$
$(5)^2$
25

17. $(-243)^{2/5}$

$(-243^{1/5})^2$
$(-3)^2$
9

18. $343^{4/3}$

$(343^{1/3})^4$
$(3)^4$
81

19. $(27)^{-2/3}$

$\frac{1}{(27)^{2/3}} = \frac{1}{(27^{1/3})^2}$
$\frac{1}{3^2} = \frac{1}{9}$

20. $(9)^{-5/2}$

$\frac{1}{9^{5/2}} = \frac{1}{(9^{1/2})^5} = \frac{1}{3^5} = \frac{1}{243}$

Abstract Thinking… Let x be a nonnegative real number. Determine whether the statement is *always, sometimes,* or *never* true. Justify your answer.

21. $(x^{1/3})^3 = x$

always

22. $x^{1/3} = x^{-3}$

Sometimes

$x = 1$
$1^{1/3} = 1$
$1^{-3} = 1$

23. $x^{1/3} = \sqrt[3]{x}$

always

24. $x^{1/3} = x^3$

Sometimes

$x = 1$
$1^{1/3} = 1$
$1^3 = 1$

25. $\frac{x^{2/3}}{x^{1/3}} = \sqrt[3]{x}$

Always

25. $x = x^{1/3} \cdot x^3$

always

Algebra 1 – Chapter 6
Lesson 3

Determine whether the equation represents an exponential function.

1. $y = 4(7)^x$

Yes

2. $Y = -6x$

No

3. $Y = 2x^3$

No

4. $Y = -3^x$

Yes

5. $Y = 9(-5)^x$

Yes

6. $Y = \frac{1}{2}(1)^x$

Yes

Determine whether the tables represents a *linear* or *exponential* function.

7.

x	y
1	−2
2	0
3	2
4	4

No

8.

x	y
1	6
2	12
3	24
4	48

Yes

9.

x	−1	0	1	2	3
y	0.25	1	4	16	64

Yes

10.

x	−3	0	3	6	9
y	10	1	−8	−17	−26

No

Evaluate the function for the given value of x.

11. $Y = 3^x$; $x = 2$

$3^2 = 9$

12. $F(x) = 3(2)^x$; $x = -1$

$3(2)^{-1} = 3\left(\frac{1}{2}\right)$

$\frac{3}{2}$

13. $Y = -4(5)^x$; $x = 2$

$-4(5)^2$

$-4(25)$

-100

14. $f(x) = 0.5^x$; $x = -3$

$\frac{1}{2}^{-3} = 2^3$

8

15. $F(x) = \frac{1}{3}(6)^x$; $x = 3$

$\frac{1}{3}(6)^3$

$\frac{1}{3}(216)$

72

16. $Y = \frac{1}{4}(4)^x$; $x = \frac{3}{2}$

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

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

2

Algebra 1 – Chapter 6
Lesson 5
Solve the Equation.

1. $4^{5x} = 4^{10}$

$\frac{5x}{5} = \frac{10}{5}$

$x = 2$

2. $7^{x-4} = 7^{8}$

$x - 4 = 8$
$+4 \quad +4$

$x = 12$

3. $2^{4x} = 2^{x+9}$

$4x = x + 9$
$-x \quad -x$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

4. $3^{x} = 243$

$3^{x} = 3^{5}$

$x = 5$

5. $216^{x} = 6^{x+10}$

$6^{3(x)} = 6^{x+10}$

$3x = x + 10$
$-x \quad -x$

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$

6. $27^{x} = 9^{x-2}$

$3^{3(x)} = 3^{2(x-2)}$

$3x = 2x - 4$
$-2x \quad -2x$

$x = -4$

7. $\left(\frac{1}{4}\right)^{x} = 256$

$4^{-1(x)} = 4^{4}$

$\frac{-x}{-1} = \frac{4}{-1}$

$x = -4$

8. $3^{4x-9} = \frac{1}{243}$

$3^{4x-9} = 3^{-5}$

$4x - 9 = -5$
$+9 \quad +9$

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

$\boxed{x = 1}$

Algebra 1 – Chapter 7
Lesson 1

Find the sum or difference.

9. $(5y + 4) + (-2y + 6)$

$5y+4-2y+6$

$\boxed{3y+10}$

10. $(-3p^3 + 5p^2 - 2p) + (-p^3 - 8p^2 - 15p)$

$-3p^3+5p^2-2p-p^3-8p^2-15p$

$\boxed{-4p^3-3p^2-17p}$

11. $6x + 9) - (7x + 1)$

$6x+9-7x-1$

$\boxed{-x+8}$

12. $(4m^2 - m + 2) - (-3m^2 + 10m + 4)$

$4m^2-m+2+3m^2-10m-4$

$7m^2-11m-2$

13. $(9r^2 + 4r - 7) + (3r^2 - 3r)$

$9r^2+4r-7+3r^2-3r$

$\boxed{12r^2+r-7}$

14. $(-r - 10) - (-4r^3 + r^2 + 7r)$

$-r-10+4r^3-r^2-7r$

$4r^3-2r^2-7r-10$

Complete the statement with *always, sometimes,* or *never*. Explain your reasoning.

15. The terms of polynomials are always **monomials.**

16. The difference of two trinomials is sometimes **a trinomial.**

17. A binomial is sometimes **a polynomial of degree 2.**

18. The sum of two polynomials is always **a polynomial.**

Algebra 1 – Chapter 7

Lesson 1

Find the degree of the monomial.

1. $23x^4$

4

2. $-\frac{1}{2}$

0

3. $8m^2n^4$

6

4. $-3q^4rs^6$

11

Write the polynomial is standard form. Identify the degree and leading coefficient of the polynomial. Then classify the polynomial by the number of terms.

5. $6c^2 + 2z^4 - c$

$2z^4+6c^2-c$

D: 4

LC: 2

Trinomial

6. $8d - 2 - 4d^3$

$-4d^3+8d-2$

D: 3

LC: -4

Trinomial

7. $3t^8$

D: 8

LC: 3

Monomial

8. $7 + 3p^2$

$3p^2+7$

D: 2

LC: 3

Binomial

Algebra 1 – Chapter 7

Lesson 2

Use the distributive property to find the product.

1. (y + 4)(y + 6)

$y(y)+y(6)+4(y)+4(6)$

$y^2+6y+4y+24$

$\boxed{y^2+10y+24}$

2. (a + 8)(a − 3)

$a(a)+a(-3)+8(a)+8(-3)$

$a^2-3a+8a-24$

$\boxed{a^2+5a-24}$

Use a table to find the product.

3. (y + 10)(y − 5)

	y	10
y	y^2	$10y$
−5	$-5y$	-50

$y^2+10y-5y-50$

$\boxed{y^2+5y-50}$

4. (5g + 3)(g + 8)

	5g	3
g	$5g^2$	$3g$
8	$40g$	24

$5g^2+3g+40g+24$

$\boxed{5g^2+43g+24}$

Use the FOIL method to find the product.

5. (w + 9)(w + 6)

$w^2+9w+6w+54$

$\boxed{w^2+15w+54}$

6. (x − 4)(x + 8)

$x^2-4x+8x-32$

$\boxed{x^2+4x-32}$

7. (8 − 4x)(2x + 6)

$16x+48-8x^2-24x$

$\boxed{-8x^2-8x+48}$

8. (v − 3)(v² + 8v)

$v^3+8v^2-3v^2-24v$

$\boxed{v^3+5v^2-24v}$

Algebra 1 – Chapter 7
Lesson 2

Find the product.

9. $(x + 1)(x^2 + 4x + 8)$

$x^3+4x^2+8x+x^2+4x+8$

$\boxed{x^3+5x^2+12x+8}$

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

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

$\boxed{x^3-7x^2+11x-2}$

11. $(d + 6)(2d^2 - d + 7)$

$2d^3-d^2+7d+12d^2-6d+42$

$\boxed{2d^3+11d^2+d+42}$

12. $(3e^2 - 5e + 7)(6e + 1)$

$18e^3+3e^2-30e^2-5e+42e+7$

$\boxed{18e^3-27e^2+37e+7}$

Algebra 1 – Chapter 7
Lesson 3

Find the product.

1. $(x + 8)^2$

$(x+8)(x+8)$

$x^2+8x+8x+64$

$\boxed{x^2+16x+64}$

2. $(5x + 2)^2$

$(5x+2)(5x+2)$

$25x^2+10x+10x+4$

$\boxed{25x^2+20x+4}$

3. $(-12 - x)^2$

$(-12-x)(-12-x)$

$144+12x+12x+x^2$

$\boxed{x^2+24x+144}$

4. $(6x - 3y)^2$

$(6x-3y)(6x-3y)$

$36x^2-18xy-18xy+9y^2$

$\boxed{36x^2-36xy+9y^2}$

5. $(x - 7)(x + 7)$

$x^2-7x+7x-49$

$\boxed{x^2-49}$

6. $(x + 6)(x - 6)$

$x^2-6x+6x-36$

$\boxed{x^2-36}$

Algebra 1 – Chapter 7

Lesson 3

7. (7m + 8n)(7m − 8n)

$49m^2 + 56mn - 56mn - 64n^2$

$\boxed{49m^2 - 64n^2}$

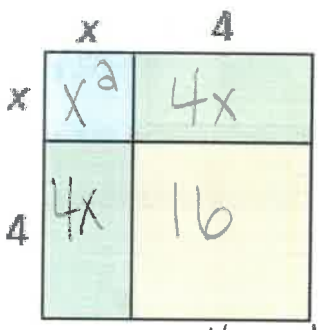
8. (−5g − 2h)(−5g + 2h)

$25g^2 - 10gh + 10gh - 4h^2$

$\boxed{25g^2 - 4h^2}$

Write a polynomial that represents the area of the square.

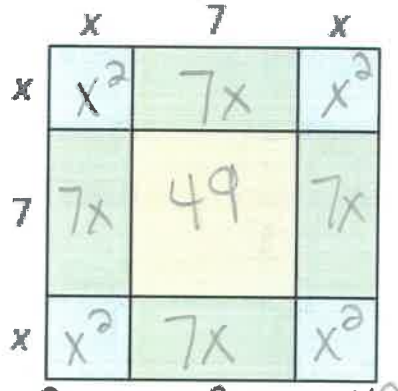
9.



$x^2 + 4x + 4x + 16$

$\boxed{x^2 + 8x + 16}$

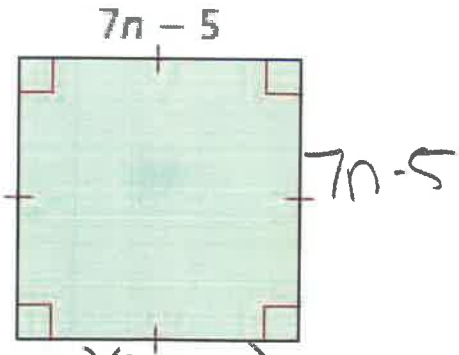
10.



$x^2 + 7x + x^2 + 7x + 49 + 7x + x^2 + 7x + x^2$

$\boxed{4x^2 + 28x + 49}$

11.

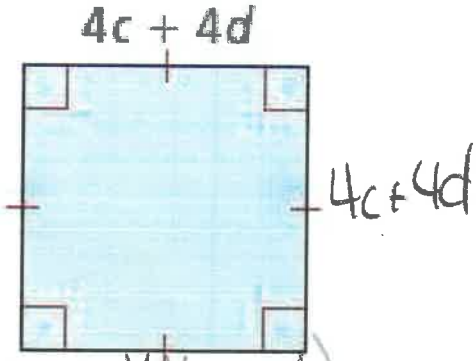


$(7n-5)(7n-5)$

$49n^2 - 35n - 35n + 25$

$\boxed{49n^2 - 70n + 25}$

12.



$(4c+4d)(4c+4d)$

$16c^2 + 16cd + 16cd + 16d^2$

$\boxed{16c^2 + 32cd + 16d^2}$

Algebra 1 – Chapter 7
Lesson 4

Solve the equation.

1. $x(x + 7) = 0$

$\boxed{x=0}$ $x+7=0$
$-7 \quad -7$
$\boxed{x=-7}$

2. $r(r - 10) = 0$

$\boxed{r=0}$ $r-10=0$
$+10 \quad +10$
$\boxed{r=10}$

3. $12t(t - 5) = 0$

$\frac{12t}{12}=\frac{0}{12}$ $t-5=0$
$+5 \quad +5$
$\boxed{t=0}$ $\boxed{t=5}$

4. $-2v(v + 1) = 0$

$\frac{-2v}{-2}=\frac{0}{-2}$ $v+1=0$
$-1 \quad -1$
$\boxed{v=0}$ $\boxed{v=-1}$

5. $(s - 9)(s - 1) = 0$

$s-9=0$ $s-1=0$
$+9 \quad +9$ $+1 \quad +1$
$\boxed{s=9}$ $\boxed{s=1}$

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

$y+2=0$ $y-6=0$
$-2 \quad -2$ $+6 \quad +6$
$\boxed{y=-2}$ $\boxed{y=6}$

7. $(2a - 6)(3a + 15) = 0$

$2a-6=0$ $3a+15=0$
$+6 \quad +6$ $-15 \quad -15$
$\frac{2a}{2}=\frac{6}{2}$ $\frac{3a}{3}=\frac{-15}{3}$
$\boxed{a=3}$ $\boxed{a=-5}$

8. $(4x + 3)(x + 2) = 0$

$4x+3=0$ $x+2=0$
$-3 \quad -3$ $-2 \quad -2$
$\frac{4x}{4}=\frac{-3}{4}$ $\boxed{x=-2}$
$\boxed{x=-\frac{3}{4}}$

9. $(5x + 4)^2 = 0$

$5x+4=0$
$-4 \quad -4$
$\frac{5x}{5}=\frac{-4}{5}$
$\boxed{x=-\frac{4}{5}}$

10. $(x - 8)^2 = 0$

$x-8=0$
$+8 \quad +8$
$\boxed{x=8}$

Algebra 1 – Chapter 7

Lesson 4

11. (3 - 2x)(7 - x) = 0

$3-2x=0$ $\quad$ $7-x=0$

$-3 \quad -3 \qquad -7 \quad -7$

$\frac{-2x}{-2}=\frac{-3}{-2} \qquad \frac{-x}{-1}=\frac{-7}{-1}$

$\boxed{x=\frac{3}{2}}$ $\quad$ $\boxed{x=7}$

12. (2 - 4d)(2 + 4d) = 0

$2-4d=0 \qquad 2+4d=0$

$-2 \quad -2 \qquad -2 \quad -2$

$\frac{-4d}{-4}=\frac{-2}{-4} \qquad \frac{4d}{4}=\frac{-2}{4}$

$\boxed{d=\frac{1}{2}}$ $\quad$ $\boxed{d=-\frac{1}{2}}$

13. x(x + 2)(x - 1) = 0

$\boxed{x=0}$ $\quad$ $x+2=0 \qquad x-1=0$

$-2 \quad -2 \qquad +1 \quad +1$

$\boxed{x=-2}$ $\quad$ $\boxed{x=1}$

14. 5p(2p - 3)(p + 7) = 0

$\frac{5p}{5}=\frac{0}{5} \qquad 2p-3=0 \qquad p+7=0$

$+3 \quad +3 \qquad -7 \quad -7$

$\boxed{p=0}$ $\quad$ $\frac{2p}{2}=\frac{3}{2}$ $\quad$ $\boxed{p=-7}$

$\boxed{p=\frac{3}{2}}$

15. $(r - 4)^2(r + 8) = 0$

$r-4=0 \qquad r+8=0$

$+4 \quad +4 \qquad -8 \quad -8$

$\boxed{r=4}$ $\quad$ $\boxed{r=-8}$

16. $W(w - 6)^2 = 0$

$\boxed{w=0}$ $\quad$ $w-6=0$

$+6 \quad +6$

$\boxed{w=6}$

17. (15 - 5c)(5c + 5)(-c + 6) = 0

$15-5c=0 \qquad 5c+5=0 \qquad -c+6=0$

$-15 \quad -15 \qquad -5 \quad -5 \qquad -6 \quad -6$

$\frac{-5c}{-5}=\frac{-15}{-5} \qquad \frac{5c}{5}=\frac{-5}{5} \qquad \frac{-c}{-1}=\frac{-6}{-1}$

$\boxed{c=3}$ $\quad$ $\boxed{c=-1}$ $\quad$ $\boxed{c=6}$

18. $(2 - n)(6 + \frac{2}{3}n)(n - 2) = 0$

$2-n=0 \qquad 6+\frac{2}{3}n=0 \qquad n-2=0$

$-2 \quad -2 \qquad -6 \quad -6 \qquad +2 \quad +2$

$\frac{-n}{-1}=\frac{-2}{-1} \qquad (\frac{3}{2})\frac{2}{3}n=-6(\frac{3}{2}) \qquad \boxed{n=2}$

$\boxed{n=2}$ $\quad$ $\boxed{n=-9}$

Factor the Polynomial.

19. $5x^2 + 45x$

$\boxed{5x(x+9)}$

20. $6d^2 - 21d$

$\boxed{3d(2d-7)}$

21. $3y^3 - 9y^2$

$\boxed{3y^2(y-3)}$

22. $20x^3 + 30x^2$

$\boxed{10x^2(2x+3)}$

Algebra 1 – Chapter 7
Lesson 4

23. $5n^6 + 2n^5$

$\boxed{n^5(5n+2)}$

24. $12a^4 + 8a$

$\boxed{4a(3a^3+2)}$

Solve the equation.

25. $4p^2 - p = 0$

$p(4p-1)=0$

$\boxed{p=0}$ $\quad 4p-1=0$
$+1 \quad +1$

$\frac{4p}{4}=\frac{1}{4}$

$\boxed{p=\frac{1}{4}}$

26. $6m^2 + 12m = 0$

$6m(m+2)=0$

$\frac{6m}{6}=\frac{0}{6}$ $\quad m+2=0$
$-2 \quad -2$

$\boxed{m=0}$ $\quad \boxed{m=-2}$

27. $25c + 10c^2 = 0$

$5c(5+2c)=0$

$\frac{5c}{5}=\frac{0}{5}$ $\quad 5+2c=0$
$-5 \quad -5$

$\boxed{c=0}$ $\quad \frac{2c}{2}=-\frac{5}{2}$

$\boxed{c=-\frac{5}{2}}$

28. $18x - 2x^2 = 0$

$2x(9-x)=0$

$\frac{2x}{2}=\frac{0}{2}$ $\quad 9-x=0$
$-9 \quad -9$

$\boxed{x=0}$ $\quad \frac{-x}{-1}=\frac{-9}{-1}$

$\boxed{x=9}$

29. $3x^2 = 9x$
$-9x$

$3x^2-9x=0$

$3x(x-3)=0$

$\frac{3x}{3}=\frac{0}{3}$ $\quad x-3=0$
$+3 \quad +3$

$\boxed{x=0}$ $\quad \boxed{x=3}$

30. $-28r = 4r^2$
$-4r^2 \quad -4r^2$

$-4r^2-28r=0$

$-4r(r+7)=0$

$\frac{-4r}{-4}=\frac{0}{-4}$ $\quad r+7=0$
$-7 \quad -7$

$\boxed{r=0}$ $\quad \boxed{r=-7}$

Algebra 1 – Chapter 7
Lesson 5

Factor the polynomial.

1. $x^2 + 8x + 7$

$(x+7)(x+1)$

2. $x^2 + 10x + 21$

$(x+7)(x+3)$

3. $n^2 + 9n + 20$

$(n+5)(n+4)$

4. $x^2 + 11x + 30$

$(x+6)(x+5)$

5. $h^2 + 11h + 18$

$(h+9)(h+2)$

6. $y^2 + 13y + 40$

$(y+8)(y+5)$

7. $v^2 - 5v + 4$

$(v-4)(v-1)$

8. $x^2 - 13x + 22$

$(x-11)(x-2)$

9. $d^2 - 5d + 6$

$(d-3)(d-2)$

10. $k^2 - 10k + 24$

$(k-6)(k-4)$

Algebra 1 – Chapter 7
Lesson 5

11. $w^2 - 17w + 72$

$(w-9)(w-8)$

12. $j^2 - 13j + 42$

$(j-6)(j-7)$

13. $x^2 + 3x - 4$

$(x+4)(x-1)$

14. $x^2 - 7x - 18$

$(x-9)(x+2)$

15. $n^2 + 4n - 12$

$(n+6)(n-2)$

16. $x^2 + 3x - 40$

$(x+8)(x-5)$

17. $y^2 + 2y - 48$

$(y+8)(y-6)$

18. $h^2 + 6h - 27$

$(h+9)(h-3)$

19. $x^2 - x - 20$

$(x-5)(x+4)$

20. $m^2 - 6m - 7$

$(m-7)(m+1)$

21. $-6x - 16 + x^2$

$x^2 - 6x - 16$

$(x-8)(x+2)$

22. $-7y + y^2 - 30$

$y^2 - 7y - 30$

$(x-10)(x+3)$

Algebra 1 – Chapter 7
Lesson 5

Solve the equation.

23. $m^2 + 3m + 2 = 0$

$(m+2)(m+1)=0$

$m+2=0 \quad m+1=0$

$-2 \; -2 \quad -1 \; -1$

$\boxed{m=-2} \quad \boxed{m=-1}$

24. $n^2 - 9n + 18 = 0$

$(n-6)(n-3)=0$

$n-6=0 \quad n-3=0$

$+6 \; +6 \quad +3 \; +3$

$\boxed{n=6} \quad \boxed{n=3}$

25. $x^2 + 5x - 14 = 0$

$(x+7)(x-2)=0$

$x+7=0 \quad x-2=0$

$-7 \; -7 \quad +2 \; +2$

$\boxed{x=-7} \quad \boxed{x=2}$

26. $v^2 + 11v - 26 = 0$

$(v+13)(v-2)=0$

$v+13=0 \quad v-2=0$

$-13 \; -13 \quad +2 \; +2$

$\boxed{v=-13} \quad \boxed{v=2}$

27. $t^2 + 15t = -36$

$+36 \quad +36$

$t^2+15t+36=0$

$(t+12)(t+3)=0$

$t+12=0 \quad t+3=0$

$-12 \; -12 \quad -3 \; -3$

$\boxed{t=-12} \quad \boxed{t=-3}$

28. $n^2 - 5n = 24$

$-24 \; -24$

$n^2-5n-24=0$

$(n-8)(n+3)=0$

$n-8=0 \quad n+3=0$

$+8 \; +8 \quad -3 \; -3$

$\boxed{n=8} \quad \boxed{n=-3}$

29. $a^2 + 5a - 20 = 30$

$-30 \; -30$

$a^2+5a-50=0$

$(a+10)(a-5)=0$

$a+10=0 \quad a-5=0$

$-10 \; -10 \quad +5 \; +5$

$\boxed{a=-10} \quad \boxed{a=5}$

30. $y^2 - 2y - 8 = 7$

$-7 \; -7$

$y^2-2y-15=0$

$(y-5)(y+3)=0$

$y-5=0 \quad y+3=0$

$+5 \; +5 \quad -3 \; -3$

$\boxed{y=5} \quad \boxed{y=-3}$

31. $m^2 + 10m = 15m - 34$

$-15m \; -15m \; +34$

$+34$

$m^2-5m+34=0$

Not Factorable

32. $b^2 + 5 = 8b - 10$

$-8b+10 \; -8b+10$

$b^2-8b+15=0$

$(b-5)(b-3)=0$

$b-5=3 \quad b-3=0$

$+5 \; +5 \quad +3 \; +3$

$\boxed{b=8} \quad \boxed{b=3}$

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Lesson 6

Factor the polynomial.

1. $3x^2 + 3x - 6$

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

$3(x+2)(x-1)$

2. $8x^2 + 8x - 48$

$8(x^2+x-6)$

$8(x+3)(x-2)$

3. $4k^2 + 28k + 48$

$4(k^2+7k+12)$

$4(k+4)(k+3)$

4. $6y^2 - 24y + 18$

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

$6(y-3)(x-1)$

5. $7x^2 - 63x + 140$

$7(x^2-9x+20)$

$7(x-4)(x-5)$

6. $9x^2 - 36x - 45$

$9(x^2-4x-5)$

$9(x-5)(x+1)$

7. $3h^2 + 11h + 6$

$(3h+2)(h+3)$

8. $8m^2 + 30m + 7$

$(4m+1)(2m+7)$

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9. $6x^2 - 5x + 1$

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

10. $10x^2 - 31x + 15$

$(5x-3)(2x-5)$

11. $3n^2 + 5n - 2$

$(3n-1)(n+2)$

12. $4x^2 + 4x - 3$

$(2x+3)(2x-1)$

13. $8x^2 - 10x - 12$

$2(4x^2-5x-6)$

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

14. $18x^2 - 15x - 18$

$3(6x^2-5x-6)$

$3(2x-3)(3x+2)$

15. $-3x^2 + 11x - 6$

$-(3x^2-11x+6)$

$-(3x-2)(x-3)$

16. $-7x^2 - 25x - 12$

$-(7x^2+25x+12)$

$-(7x+4)(x+3)$

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17. $-4x^2 + 19x + 5$

$-(4x^2 - 19x - 5)$

$-(4x + 1)(x - 5)$

18. $-8x^2 - 13x + 6$

$-(8x^2 + 13x - 6)$

$-(8x - 3)(x + 2)$

19. $-15y^2 - y + 28$

$-(15y^2 + y - 28)$

$-(5x + 7)(3x - 4)$

20. $-22x^2 + 29x - 9$

$-(22x^2 - 29x + 9)$

$-(11x - 9)(2x - 1)$

Solve the equation.

21. $5x^2 - 5x - 30 = 0$

$5(x^2 - x - 6) = 0$

$5(x - 3)(x + 2) = 0$

$5 \neq 0$ $\quad x - 3 = 0$ $\quad x + 2 = 0$

$+3 \quad +3$ $\quad -2 \quad -2$

$\boxed{x = 3}$ $\quad \boxed{x = -2}$

22. $2k^2 - 5k - 18 = 0$

$(2k - 9)(k + 4) = 0$

$2k - 9 = 0$ $\quad k + 4 = 0$

$+9 \quad +9$ $\quad -4 \quad -4$

$\frac{2k}{2} = \frac{9}{2}$ $\quad \boxed{k = -4}$

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

23. $-12n^2 - 11n = -15$

$+15 \quad +15$

$-12n^2 - 11n + 15 = 0$

$-(12n^2 + 11n - 15) = 0$

$-(4n - 3)(3n + 5) = 0$

$-1 \neq 0$ $\quad 4n - 3 = 0$ $\quad 3n + 5 = 0$

$+3 \quad +3$ $\quad -5 \quad -5$

$\frac{4n}{4} = \frac{3}{4}$ $\quad \frac{3n}{3} = \frac{-5}{3}$

$\boxed{n = \frac{3}{4}}$ $\quad \boxed{n = -5/3}$

24. $14x^2 - 2 = -3x$

$+3x \quad +3x$

$14x^2 + 3x - 2 = 0$

$(7x - 2)(2x + 1) = 0$

$7x - 2 = 0$ $\quad 2x + 1 = 0$

$+2 \quad +2$ $\quad -1 \quad -1$

$\frac{7x}{7} = \frac{2}{7}$ $\quad \frac{2x}{2} = \frac{-1}{2}$

$x = \frac{2}{7}$ $\quad \boxed{x = \frac{-1}{2}}$