

Key

Unit 6 Test Review WS

Write each polynomial in standard form. Then, identify the leading coefficient and name each polynomial by degree and number of terms.

1) $-2x^2 + 7x$

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

LC = -2

quadratic binomial

2) $-2a + 7 + 6a^2$

$$6a^2 - 2a + 7$$

LC = 6

quadratic trinomial

3) $9n^3 - 8n^5 + 10$

$$-8n^5 + 9n^3 + 10$$

LC = -8

quintic trinomial

4) $3n^2 + 9 - 8n + 2n^3$

$$2n^3 + 3n^2 - 8n + 9$$

LC = 2

cubic polynomial

Simplify each expression.

5) $(8x^4 - 5x + 2x^3) + (6x^3 - 5x + 3x^4)$

$$+ \begin{array}{r} 3x^4 - 5x + 6x^3 \\ \hline \end{array}$$

$$11x^4 - 10x + 8x^3$$

$$\boxed{11x^4 + 8x^3 - 10x}$$

6) $(8 + 4v - 2v^4) + (8v^4 + 7 + 4v)$

$$+ \begin{array}{r} 7 + 4v + 8v^4 \\ \hline \end{array}$$

$$15 + 8v + 6v^4$$

$$\boxed{6v^4 + 8v + 15}$$

7) $(5a + 3a^4 - 8a^3) - (7a^4 - 8a + 8a^3)$

$$+ \begin{array}{r} 8a - 7a^4 - 8a^3 \\ \hline \end{array}$$

$$13a - 4a^4 - 16a^3$$

$$\boxed{-4a^4 - 16a^3 + 13a}$$

8) $(6x^3 + 4x - 1) - (x - 2 - 3x^3)$

$$+ \begin{array}{r} 3x^3 - x + 2 \\ \hline \end{array}$$

$$\boxed{9x^3 + 3x + 1}$$

Find each product.

9) $4x^3(7x + 7)$

$$\boxed{28x^4 + 28x^3}$$

10) $2x(x + 2)$

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

11) $(2n-2)(7n+1)$

$$2n(7n+1) - 2(7n+1)$$

$$14n^2 + 2n - 14n - 2$$

$$\boxed{14n - 12n - 2}$$

13) $(8v+1)(v^2-3v-6)$

$$8v(v^2-3v-6) + 1(v^2-3v-6)$$

$$8v^3 - 24v^2 - 48v + v^2 - 3v - 6$$

$$\boxed{8v^3 - 23v^2 - 51v - 6}$$

15) $(x-7)(x+7)$

$$x(x+7) - 7(x+7)$$

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

$$\boxed{x^2 - 49}$$

17) $(x-3)^2$

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

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

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

$$\boxed{x^2 - 6x + 9}$$

Factor the common factor out of each expression.

19) $-63x^2 + 54x - 9$

$$\boxed{-9(7x^2 - 6x + 1)}$$

12) $(7v-4)(8v-5)$

$$7v(8v-5) - 4(8v-5)$$

$$56v^2 - 35v - 32v + 20$$

$$\boxed{56v^2 - 67v + 20}$$

14) $(8b+4)(b^2-6b-6)$

$$8b(b^2-6b-6) + 4(b^2-6b-6)$$

$$8b^3 - 48b^2 - 48b + 4b^2 - 24b - 24$$

$$\boxed{8b^3 - 44b^2 - 72b - 24}$$

16) $(3-7x)(3+7x)$

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

$$9 + 21x - 21x - 49x^2$$

$$\boxed{-49x^2 + 9}$$

18) $(5x+3)^2$

$$(5x+3)(5x+3)$$

$$5x(5x+3) + 3(5x+3)$$

$$25x^2 + 15x + 15x + 9$$

$$\boxed{25x^2 + 30x + 9}$$

20) $-8x^8 - 12x^2 + 36x$

$$\boxed{-4x(2x^7 + 3x - 9)}$$

Factor each completely.

21) $(21a^3 - 24a^2) + (14a - 16)$

$$3a^2(7a-8) + 2(7a-8)$$

$$\boxed{(3a^2+2)(7a-8)}$$

22) $(56x^3 - 49x^2) + (40x - 35)$

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

$$\boxed{(7x^2+5)(8x-7)}$$

$$23) 3k^2 - 6k - 9 - 3$$

$$3(k^2 - 2k - 3)$$

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

$$k(k+1) - 3(k+1)$$

$$(k-3)(k+1)$$

$$25) 8n^2 - 12n$$

$$4n(2n-3)$$

$$24) x^2 - x$$

$$x(x-1)$$

$$26) 18n^2 + 12n$$

$$6n(3n+2)$$

$$27) 8n^2 - 66n + 70$$

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$$2(4n^2 - 33n + 35)$$

$$(4n^2 - 5n)(-28n + 35)$$

$$n(4n-5) - 7(4n-5)$$

$$2(n-7)(4n-5)$$

$$29) 9x^2 - 1$$

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

$$28) 4n^2 - 25n + 36$$

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$$(4n^2 - 9n)(-14n + 36)$$

$$n(4n-9) - 4(4n-9)$$

$$(n-4)(4n-9)$$

$$30) 16n^2 - 25$$

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

Solve each equation by factoring.

$$31) (2n+1)(n-8) = 0$$

$$2n+1=0 \quad n-8=0$$

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

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

$$+8 + 8$$

$$n = 8$$

$$33) n^2 + 6n = 0$$

$$n(n+6) = 0$$

$$n = 0 \quad n+6 = 0$$

$$-6 - 6$$

$$n = -6$$

$$32) (5v+7)(v-8) = 0$$

$$5v+7=0 \quad v-8=0$$

$$\frac{-7}{5} = \frac{-7}{5}$$

$$v = -\frac{7}{5}$$

$$+8 + 8$$

$$v = 8$$

$$34) x^2 + 9x + 14 = 0$$

$$(x^2 + 2x) + (7x + 14) = 0$$

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

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

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

$$x = -7$$

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

$$x = -2$$

35) $5p^2 - 23p + 12 = 0$

$$\begin{array}{r} 60 \\ 1 \overline{) 60} \\ 2 \overline{) 30} \\ -3 \overline{) 20} \end{array}$$

$$(5p^2 - 3p)(-20p + 12) = 0$$

$$p(5p - 3) - 4(5p - 3) = 0$$

$$\begin{array}{l} p - 4 = 0 \\ +4 \quad +4 \\ \hline p = 4 \end{array} \quad \begin{array}{l} 5p - 3 = 0 \\ +3 \quad +3 \\ \hline 5p = 3 \\ p = \frac{3}{5} \end{array}$$

36) $5a^2 - 11a + 6 = 0$

$$\begin{array}{r} 30 \\ 1 \overline{) 30} \\ 2 \overline{) 15} \\ 3 \overline{) 10} \\ -5 \overline{) -6} \end{array}$$

$$(5a^2 - 5a)(-2a + 6) = 0$$

$$5a(a - 1) - 6(a - 1) = 0$$

$$\begin{array}{l} 5a - 6 = 0 \\ +6 \quad +6 \\ \hline 5a = 6 \\ a = \frac{6}{5} \end{array} \quad \begin{array}{l} a - 1 = 0 \\ +1 \quad +1 \\ \hline a = 1 \end{array}$$

37) The length of a rectangle is $3x^2 - 2x + 4$ and the width is $4x^2 - 5$.

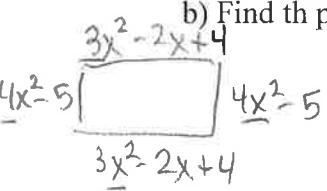
a) Find the area of rectangle.

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

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

$$12x^4 - 8x^3 + 16x^2 - 15x^2 + 10x - 20$$

b) Find the perimeter of the rectangle.



$$P = 14x^2 - 4x - 2$$

$$A = 12x^4 - 8x^3 + x^2 + 10x - 20$$

38) The area of a rectangle is $2x^2 - 5x + 3$. Find the length and the width of the rectangle.

$$\begin{array}{r} 6 \\ -1 \overline{) 6} \\ -2 \overline{) -3} \end{array}$$

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

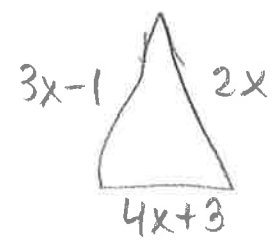
$$2x(x - 1) - 3(x - 1)$$

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

$$l = 2x - 3$$

$$w = x - 1$$

39) The perimeter of a triangle is 29. If the side lengths are $3x - 1$, $2x$, and $4x + 3$, find x .

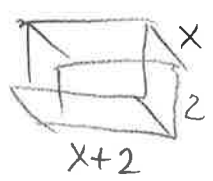


$$3x - 1 + 2x + 4x + 3 = 29$$

$$9x + 2 = 29$$

$$\begin{array}{r} -2 \quad -2 \\ \hline 9x = 27 \\ x = 3 \end{array}$$

40) The volume of a cereal box is 48 cubic feet. The height of the sandbox is 2 feet, the width is x and the length is $x + 2$. Find x .



$$2 \cdot x(x + 2) = 48$$

$$2x(x + 2) = 48$$

$$2x^2 + 4x = 48$$

$$\begin{array}{r} -48 \quad -48 \\ \hline 2x^2 + 4x - 48 = 0 \end{array}$$

$$2(x^2 + 2x - 24) = 0$$

$$(x^2 - 4x)(6x - 24) = 0$$

$$x(x - 4) + 6(x - 4) = 0$$

$$\begin{array}{l} x + 6 = 0 \\ -6 \quad -6 \\ \hline x = -6 \end{array} \quad \begin{array}{l} x - 4 = 0 \\ +4 \quad +4 \\ \hline x = 4 \end{array}$$