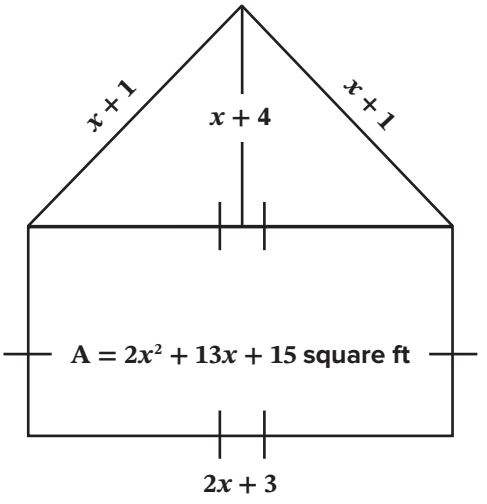
Unit 4 Test: Polynomial Expressions and Equations

Open Response

1) K.C. Construction is installing siding on the Abbot family's house shown in the given figure. The surface area for the side of the house is needed for the siding as well as the perimeter for the trim pieces. The house is measured in feet.



A) Find the area of the composite figure. Explain your thinking.

B) Find the length and the width of the house without the roof.

C) Find the perimeter of the entire side of the house. Write a formula representing the perimeter.

D) The Abbot family already knew the area of the front of their house was 720 square feet. The front of their house is a rectangle with the total area being represented by the equation $5x^2 - 7x + 696 = 720$. K.C. Construction needs the value(s) of x to determine other measurements.

CONTINUE

_____ **2)** Simplify: $\left(11x^8y\right)^2 \cdot x^5$

A) $22x^{21}y^2$

B) $121x^{21}y^2$

C) $121x^{15}y^2$

D) $121x^{16}y^2$

_____ **3)** Classify the polynomial by degree and number of terms: $5x^3 + 6x^2 - 12x$

A) quadratic trinomial

B) linear trinomial

C) cubic trinomial

D) 5th degree trinomial

_____ **4)** Factor completely: $xy^2 + 4xy - 2y - 8$

A) $(xy + 2)(y - 4)$

B) $xy(y - 4) - 2(y - 4)$

C) $(xy - 2)(y + 4)$

D) $(y - 2)(xy - 4)$

_____ **5)** Factor completely: $2x^3 + 10x^2 + 12x$

A) $2x\left(x^2 + 5x + 6\right)$

B) $2x(x + 3)(x + 2)$

C) $\left(2x^2 + 6x\right)(x + 2)$

D) not factorable

_____ **6)** The product of two whole numbers is 48. One of the numbers is five times the other number, less eight. What are the two numbers?

A) 4 and 12

B) 6 and 8

C) 2 and 24

D) 3 and 16

CONTINUE

_____ **7)** Solve: $2x^2 - 8x = -6$

A) $x = -3, -1$

B) $x = -3, 1$

C) $x = -1, 3$

D) $x = 1, 3$

_____ **8)** Factor completely: $64x^2 - 49$

A) $(8x - 7)^2$

B) $(8x + 7)^2$

C) $(8x - 7)(8x + 7)$

D) not factorable

_____ **9)** Simplify: $\left(10^2 a^{30} b^{50}\right)^{\frac{1}{2}}$

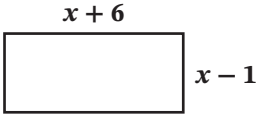
A) $10a^{60}b^{100}$

B) $10a^{30.5}b^{50.5}$

C) $10a^{15}b^{25}$

D) $10(ab)^{40}$

_____ **10)** Find the perimeter of the rectangle.



A) $4x + 10$ units

B) $2x + 5$ units

C) $x^2 + 5$ units

D) $x^2 + 5x - 6$ units

_____ **11)** Factor completely: $x^2 - 7x - 30$

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

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

C) $(x - 5)(x - 6)$

D) not factorable

CONTINUE

_____ **12)** Solve: $6x^2 - 19x + 15 = 0$

A) $x = -\frac{3}{2}, \frac{5}{3}$

B) $x = \frac{3}{2}, \frac{5}{3}$

C) $x = -\frac{3}{2}, -\frac{5}{3}$

D) $x = \frac{3}{2}, -\frac{5}{3}$

_____ **13)** Find the product: $(x - y)^2$

A) $x^2 - y^2$

B) $x^2 + y^2$

C) $x^2 - 2xy + y^2$

D) $x^2 - 2xy - y^2$

_____ **14)** Determine the possible solution(s) to the equation: $x^2 - 5 = 4$

A) $x = 9$

B) $x = 3$

C) $x = -3$

D) $x = \pm 3$

_____ **15)** The volume of a rectangular prism was given as $V = x(3x - 1)(x + 5)$. Determine the value(s) of x that will result in possible side lengths.

A) $x = -5, 0, \frac{1}{3}$

B) $x = 0, \frac{1}{3}$

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

D) no solution

_____ **16)** Choose the polynomial expression written in standard form.

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

B) $-4x + 3x^2 + 2$

C) $x^2 - 4x + 6$

D) $x^2 + 2 - 4x$

CONTINUE

_____ **17)** Find the area of a square with a side length of $8a$ units.

A) $16a$

B) $16a^2$

C) $64a$

D) $64a^2$

_____ **18)** Factor completely: $9x^2 - 144$

A) $9(x-4)(x+4)$

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

C) $(3x-12)(3x+12)$

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

_____ **19)** Factor completely: $6x^2 - x + 19$

A) $(6x-1)(x+19)$

B) $(2x+1)(3x+19)$

C) $(2x-1)(3x-19)$

D) not factorable

_____ **20)** The area of a rectangle is 24 square feet. The side lengths are x and $5x+2$ feet long. Use the following equation to find the value(s) of x to determine the dimensions of the rectangle: $x(5x+2) = 24$

A) The dimensions of the rectangle are 4 feet by 6 feet.

B) The dimensions of the rectangle are 2 feet by 12 feet.

C) The dimensions of the rectangle are 3 feet by 8 feet.

D) The dimensions of the rectangle are $-\frac{12}{5}$ feet by -10 feet.

_____ **21)** Factor completely: $14x^2y - 7x^2$

A) $7x^2$

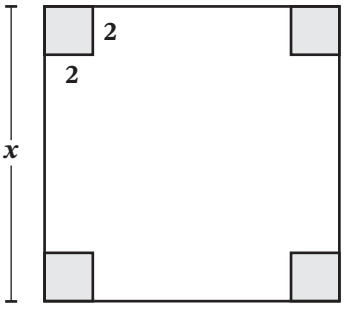
B) $7x^2(2y)$

C) $7x^2(2y-1)$

D) $7\left(2x^2y - x^2\right)$

CONTINUE

_____ **22)** A square cardboard sheet with side lengths of x will be folded into a box with no lid. The area of the bottom of the box will be 121 square inches. A two inch square needs to be cut out of each corner so the box can be formed. Which equation could be used to find the length of the square before removing the corners?



A) $(x-4)^2 = 121$

B) $(x-2)^2 = 121$

C) $(x+2)^2 = 121$

D) $(x+4)^2 = 121$

23) Select all that apply. Determine all possible factors of the expression: $50y^2 - 8$

- ☐ 2
- ☐ $(5y+2)$
- ☐ $(25y-4)$
- ☐ $(5y-2)$

24) Select all that apply. Determine all possible solutions for the equation $x^2 - x - 30 = 0$

- ☐ -6
- ☐ -5
- ☐ 5
- ☐ 6

25) Select all that apply. Classify the expression: $5x^2 - x$

- ☐ binomial
- ☐ trinomial
- ☐ linear
- ☐ quadratic
- ☐ constant

STOP