Lesson 5.2: Common Factors of Polynomials

Complete the *Practice* below. When you have completed all the questions for *Lesson 5.2 Practice – II* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – II

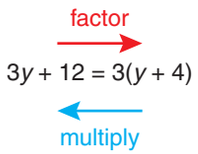
1. Determine the GCF of $41nr^3$ and $17n^3r$.

2. Explain how to determine the GCF of x^{33}, x^{47}, and x^{25}, by inspection.

3. Write each of $28x^2$ and $42xy^2$ as a product of their GCF and another monomial factor.

4. Write a trinomial with a GCF of $9rs^2$.

5. This diagram shows that factoring and multiplying are opposite processes. Explain what that means.



6. Factor each of the following polynomials using the greatest common factor.

   a. $4x^2 + 10xy - 18y^2$

   b. $-12a^3b^2c^2 - 18a^2b^2c^2 - 36a^2b^3c$

7. The surface area formulas are shown for three objects.

Right Prism	$SA = 2lw + 2hw + 2lh$
Right Cylinder	$SA = 2\pi r^2 + 2\pi rh$
Right Cone	$SA = \pi r^2 + \pi rs$

Write an alternative surface area formula for each object by factoring using the greatest common factor.

8. Chaz factored $4x^2 + 12x - xy - 3y$ as follows.

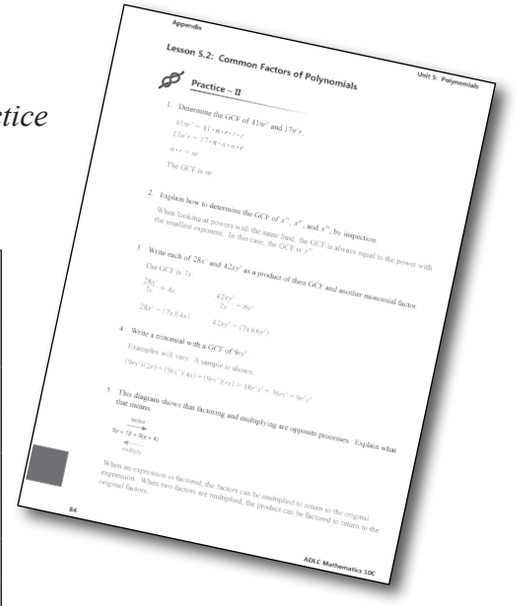
$$\begin{aligned} 4x^2 + 12x - xy - 3y &= (4x^2 + 12x) + (-xy - 3y) \\ &= (4x)(x + 3) + (-y)(x + 3) \\ &= (x + 3)(4x - y) \end{aligned}$$

Explain Chaz's strategy.

Mark your work for *Lesson 5.2 Practice – II* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 5.2 Practice – II* is _____.


Appendix

Lesson 5.2: Common Factors of Polynomials

Unit 5: Polynomials

Practice – II

1. Determine the GCF of $42m^2$ and $17n^2r$.

$42m^2 = 2 \cdot 3 \cdot 7 \cdot m \cdot r \cdot r$

$17n^2r = 17 \cdot n \cdot n \cdot r$

$m \cdot r = mr$

The GCF is mr.

2. Explain how to determine the GCF of x^m, x^n, and x^{mn} by inspection.

When looking at powers with the same base, the GCF is always equal to the power with the smallest exponent. In this case, the GCF is x^m.

3. Write each of $28x^2$ and $42xy^2$ as a product of their GCF and another monomial factor.

The GCF is $7x$.

$\frac{28x^2}{7x} = 4x$ $\quad$ $\frac{42xy^2}{7x} = 6y^2$

$28x^2 = (7x)(4x)$ $\quad$ $42xy^2 = (7x)(6y^2)$

4. Write a trinomial with a GCF of $9xy^2$.

Examples will vary. A sample is shown.

$(9xy^2)(2y) + (9xy^2)(4x) + (9xy^2)(y) = 18xy^3 + 36x^2y^2 + 9xy^3$

5. This diagram shows that factoring and multiplying are opposite processes. Explain what that means.

factor

$3x^2 + 12x = 3x(x + 4)$

multiply

When an expression is factored, the factors can be multiplied to return to the original expression. When two factors are multiplied, the product can be factored to return to the original factors.

84

ADLC Mathematics 10C

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.

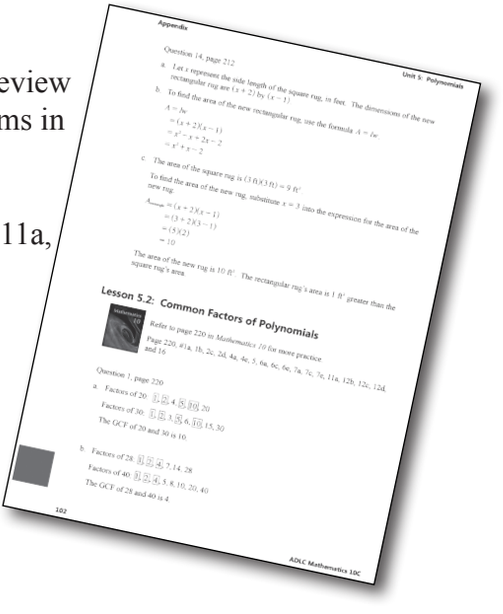
Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
4			
5			
6			
7			
8			

You may proceed to *Explore Your Understanding Assignment* on the next page of this *Workbook*.

Note: Before you complete *Explore Your Understanding*, you may review your skills and get more practice by completing the following problems in *Mathematics 10*.

- Page 220, #1a, 1b, 2c, 2d, 4a, 4e, 5, 6a, 6c, 6e, 7a, 7c, 7e, 11a, 12b, 12c, 12d, and 16

Check your work in *Enhance Your Understanding*.


Appendix

Question 14, page 212

Unit 5: Polynomials

a. Let x represent the side length of the square rug, in feet. The dimensions of the new rectangular rug are $(x + 2)$ by $(x - 1)$.

b. To find the area of the new rectangular rug, use the formula $A = lw$.

$A = lw$

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

$= x^2 - x + 2x - 2$

$= x^2 + x - 2$

c. The area of the square rug is $(3 ft)(3 ft) = 9 ft^2$.

To find the area of the new rug, substitute $x = 3$ into the expression for the area of the new rug.

$A_{new} = (x + 2)(x - 1)$

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

$= (5)(2)$

$= 10$

The area of the new rug is $10 ft^2$. The rectangular rug's area is $1 ft^2$ greater than the square rug's area.

Lesson 5.2: Common Factors of Polynomials

Refer to page 220 in *Mathematics 10* for more practice.

Page 220, #1a, 1b, 2c, 2d, 4a, 4e, 5, 6a, 6c, 6e, 7a, 7c, 7e, 11a, 12b, 12c, 12d, and 16

Question 1, page 220

a. Factors of 20: 1, 2, 4, 5, 10, 20

Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30

The GCF of 20 and 30 is 10.

b. Factors of 28: 1, 2, 4, 7, 14, 28

Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40

The GCF of 28 and 40 is 4.

102

ADLC Mathematics 10C