**MATH 10C UNIT 3** **REVIEW** (Chapter 3 – Factors and Products)

1. a) Find the least common multiple for 12, 8 and 40. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b) Find the greatest common factor of 160, 1000 and 1200. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c) Find the greatest common factor of 22*x*2*y*3, 4*xy*2 and 42*xy*. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d) Find the least common multiple for 8*x*2, 12*x*4 and 16*x*3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*e*

Cube volume = 1331 cm3

*e*

*e*

2. Find the values of *s* and *e* in the sketches below.

*s*

Square area = 169 cm2

*s*

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Write the factorization shown by the algebra tiles at right. The variable is *x*.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. List the polynomial factoring techniques, starting with the one that should be tried first.

5. OPTIONAL QUESTION: Danielle attempts to factor the polynomial 3*x*2 + 21*x* – 15, using decomposition. She should try to find two numbers that have a product equal to \_\_\_\_\_\_ and a sum equal to \_\_\_\_\_\_.

Factor each expression completely.

6. 7*xy*3 + 14*x*4*y* – 35*x*3*y*4

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. *a*2 + *a* – 2

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. *x*2 – 25

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. 9*p*2 –30*p* + 25

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. 2*n*2 + 10*n* + 8

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. 3*m*2 – 75

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. 6*n*2 –3*n* – 9

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. Expand and simplify.

 a) (-3*x* + *y*)(– 2*x* + 4*y* + 5)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b) (*a* – 2)(*a* + 2) – (*a* + 3)(*a* + 3)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c) (4*p* + 1)(-4*p* + 1)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d) (2*n* – 1)(*n* – 5) + (*n* + 6)(3*n* + 4)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. State the factoring technique that you would use to factor each of the following, then factor each expression completely. Techniques include common factor, quadratic (decomposition), difference of squares and perfect squares.

 a) -*x*2 + 121 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b) 36*x*2 + 96*xy* + 64*y*2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c) 22*mn* – 33*mn*4 + 11*mn*3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d) 2*x*2 – 7*x* – 15 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2*x* + 3

*x* + 5

11

3

15. Find and simplify an expression for the shaded area in the figure. If *x* = 2 inches, find the shaded area.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. Use a factoring technique to determine if each expression is a perfect square, a perfect cube, or neither.

 a) 121 \_\_\_\_\_\_\_\_\_\_ b) 729 \_\_\_\_\_\_\_\_\_\_ c) 1000 \_\_\_\_\_\_\_\_\_\_

 d) 128 \_\_\_\_\_\_\_\_\_\_ e) 3375 \_\_\_\_\_\_\_\_\_\_ f) 400 \_\_\_\_\_\_\_\_\_\_

17. Use an area model to show and determine the product of (3*d* + 7)(-2*d* + 5).