Foil\_Factor\_Multiples

April 2015

4) For all real numbers *a*, *b*, and *c*, the expression *ax* - *bx* + *cx* can be written as the product of *x* and which of the following?

**F.** –a + b – c

**G.** a – b – c

**H.** a – b + c

**J.** a + b – c

**K.** a + b – c

7) What is the least common multiple of 50, 70, and 90?

1. 70
2. 210
3. 315
4. 3,150
5. 315,000

23) For what 2 values of *x* is the equation true?

**A.** -6 and 1

**B.** -3 and 2

**C.** -2 and 3

**D.** -1 and 6

**E.** 2 and 3

37. Consider all products xy such that x is divisible by 8 and y is divisible by 14. Which of the following whole numbers is NOT a factor of each product xy?

1. 2
2. 8
3. 12
4. 56
5. 112

June 2015

11) Which of the following expressions is equivalent to (3*x* + 6)(2*x* - 1)?

**A.** 15*x* - 6

**B.** 15*x* - 1

**C.** 6x2 - 6

**D.** 6x2 + 9x – 6

**E.** 6x2 + 12x – 6

25. One caution sign flashes every 4 seconds, and another caution sign flashes every 10 seconds. At a certain instant, the 2 signs flash at the same time. How many seconds elapse until the 2 signs next flash at the same time?

A. 6

B. 7

C. 14

D. 20

E. 40

52) Given that (*x* + 2) and (*x* - 1) are factors of the quadratic expressions below, what are the values of *a* and *b*?

**F.**  -4 5

**G.** -3 1

**H.** -3 5

**J.**  -1 3

**K.** -1 -1

53) The height above the ground, *h* units, of an object *t* seconds after being thrown from the top of a building is given by the equation h = -2t2 + 10t + 48. An equivalent factored form of this equation shows that the object:

A. starts at a point 2 units off the ground.

B. reaches a maximum height of 3 units.

C. reaches a maximum height of 8 units.

D. reaches the ground at 3 seconds.

E. reaches the ground at 8 seconds.

December 2015

29) Which of the following expressions is a factor of the polynomial ?

**A.** *x* 9

**B.** *x* 8

**C.** *x* + 2

**D.** *x* + 9

**E.** *x* + 36

34. Given that n is a positive integer b is 3 times n, what is the least common denominator, in terms, of n, for the addition of 1/b and 1/n?

1. (n + 3)n
2. (n + 3)
3. (⅓)n
4. 3n
5. 3n2

April 2016

41. For all x=/= -2, which of the following expressions is equal to (x2 + 5x + 6) / (x + 2) + x + 5 ?

A. x + 8

B. 2x + 8

C. x2 + 8x + 15

D. (2x + 8) / (x + 2)

E. (x2 + 6x + 11) / (x + 2)

45) Which of the following expressions is the greatest monomial factor of *80x3y + 48x2y2*?

1. *16x2y*
2. *16x3y2*
3. *16x5y3*
4. *240x3y2*
5. *240x5y3*

57) Consider the fractions , , and, where *a* and *b* are distinct prime numbers greater 3 and *c* = 3*a*. Suppose that *a* · *b* · *c* is used as the common denominator when finding the sum of these fractions. In order for the sum to be in lowest terms, its numerator and denominator must be reduced by a factor of which of the following?

A. 3

B. *a*

C. *b*

D. *c*

E. *ab*

June 2016

7) What is the least common denominator of the fractions 4/35, 1/28, and 3/8?

1. 40
2. 280
3. 980
4. 1,120
5. 7,840

8. Which of the following polynomial equations has solutions -2 and 5?

1. (x - 5)(x + 2)2 = 0
2. (x - 3)(x + 3)2 = 0
3. (x + 3)(x - 3)2 = 0
4. (x + 5)(x - 2)2 = 0
5. (x + 5)(x + 2)2 = 0

28) Which of the expressions below is a factor of the polynomial 2x3 + x2 - 6x?

I. *x*

II. 2*x* + 3

III. *x* 2

**F.** I. only

**G.** I and II only

**H.** I and III only

**J.** II and III only

**K.** I, II, and III

December 2016

13) The polynomial is equivalent to the product of (5*x* + 4) and which of the following binomials?

**A**. 9*x* 4

**B.** 9x 2

**C.** 9*x* + 4

**D.** 40*x* 12

**E.** 40*x* 2

48. Consider all positive integers that are multiples of 20 and that are less than or equal to 300. What fraction of those integers are multiples of 15?

1. ⅓
2. ⅕
3. 1/15
4. 7/15
5. 8/15

June 2017

47) The greatest common factor of 2 whole numbers is 10. The least common multiple of these same two numbers is 120. What are the 2 numbers?

1. 6 and 20
2. 10 and 12
3. 10 and 20
4. 20 and 60
5. 30 and 40

58) For all real number *x* and the imaginary number *i*, which of the following expressions is equivalent to (x – 3i)3?

**F.** x3 – 9x2i – 27x + 27i

**G.** x3 + 9x2i – 27x + 27i

**H.** x3 + 3x2i – 9x – 27i

**J.** x3 – 3x2i – 9x + 27i

**K.** x3 + 27i

April 2017

27) Which of the following expressions is a factor of x3 – 64?

**A.** *x* - 4

**B.** *x*  + 4

**C.** *x* + 64

**D.** x2 + 16

**E.** x2 – 4x + 16

31) The number 1,001 is the product of the prime numbers 7, 11, and 13. Knowing this, what is the prime factorization of 30,030?

1. 3 \* 7 \* 10 \* 13
2. 30 \* 7 \* 11 \* 13
3. 2 \* 5 \* 7 \* 11 \* 13
4. 3 \* 7 \* 10 \* 11 \* 13
5. 2 \* 3 \* 5 \* 7 \* 11 \* 13