

Name: _____

Date: _____

Factoring 2 Practice

Factor each of the following. If not factorable, write prime.

1) $k^2 - 8k + 16$

$$(k-4)(k-4) \text{ or } (k-4)^2$$

2) $2s^2 - 12s + 18$

$$2(s^2 - 6s + 9)$$
$$2(s-3)^2$$

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

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

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

$$(x+5)(x-1)$$

5) $6x^2 - 48x + 96$

$$6(x^2 - 8x + 16)$$
$$6(x-4)^2$$

6) $7x^2 - 70x + 175$

$$7(x^2 - 10x + 25)$$
$$7(x-5)^2$$

7) $a^2 - 22a + 72$

$$(a-4)(a-18)$$

8) $y^2 - 2y - 20$

$$(y \quad y) \text{ Prime}$$

9) $3ax^2 + 36ax + 60a$

$$3a(x^2 + 12x + 20)$$
$$3a(x+2)(x+10)$$

10) $4x^2 + 24x - 64$

$$4(x^2 + 6x - 16)$$
$$4(x+8)(x-2)$$

11) $2x^2 + 11x + 15$

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

12) $2x^2 - 3x - 35$

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

13) $3x^2 - 13x + 13$

$$(3x \quad 13)(x \quad 1)$$
$$\text{Prime}$$

14) $12x^4 + 60x^3 + 27x^2$

$$3x^2(4x^2 + 20x + 9)$$
$$3x^2(2x+1)(2x+9)$$

$$15) x^2 - 5x - 6$$

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

$$16) x^2 + 12x - 45$$

$$(x+15)(x-3)$$

$$17) x^2 + 10x + 25$$

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

$$18) x^2 + 10x + 24$$

$$(x+6)(x+4)$$

$$19) 2a^2 - 10a - 48$$

$$2(a^2 - 5a - 24)$$

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

$$20) 6x^2 + 31x + 5$$

$$(6x+1)(x+5)$$

$$21) 32x^3 + 56x^2 - 16x$$

$$8x(4x^2 + 7x - 2)$$

$$8x(4x-1)(x+2)$$

$$22) 6y^2 - 5y - 4$$

$$6y^2 - 8y + 3y - 4$$

$$2y(3y-4) + 1(3y-4)$$

$$(2y+1)(3y-4)$$

M-24.
A-5

23) A rectangle has an area given by $A = 3x^2 + 5x - 2$. Find expression for the possible length and width of the rectangle.

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

Length \nearrow Width \nwarrow on vice versa.

24) Find the area of the shaded region shown below. The area of the rectangle is $5x^2 + 12x + 10$ and the area of the circle is $x^2 + 2$. Write the area in factored form.

$$5x^2 + 12x + 10 - (x^2 + 2)$$

$$4x^2 + 12x + 8 = 4(x^2 + 3x + 2) = 4(x+2)(x+1)$$

units squared



$$25) 9b^2 + 72bc + 144c^2$$

$$9(b^2 + 8bc + 16c^2) = 9(b+4c)(b+4c)$$

$$26) a^{10} - 2a^5 + 1$$

$$(a^5 - 1)(a^5 - 1)$$

$$27) x^4 - 20x^2 + 64$$

$$(x^2 - 4)(x^2 - 16)$$

$$(x+2)(x-2)(x+4)(x-4)$$

$$28) x^6 - 14x^3 + 45$$

$$(x^3 - 9)(x^3 - 5)$$

Intermediate Algebra

Name _____

Find the Missing Value

Date _____ Block _____

Applying your understanding of factoring trinomials to find all possible integer values of k .

1.) $x^2 + kx + 56$
 ± 57 ± 15
 ± 30
 ± 18

$$\begin{array}{r|l} 56 & \\ \hline \pm 1 & \pm 56 \\ \pm 2 & \pm 28 \\ \pm 4 & \pm 14 \\ \pm 7 & \pm 8 \end{array}$$

7.) $x^2 + 11x + k, k > 0$
 $k = 10 \quad 28$
 $18 \quad 30$
 24

1 10
 2 9
 3 8
 4 7
 5 6

2.) $x^2 + kx - 90$
 ± 89 ± 9
 ± 43 ± 1
 ± 27 ± 1
 ± 13

$$\begin{array}{r|l} -90 & \\ \hline -1 & 90 \quad 1 -90 \\ -2 & 45 \quad 2 -45 \\ -3 & 30 \quad 3 -30 \\ -5 & 18 \quad 5 -18 \\ -6 & 15 \quad 6 -15 \\ -9 & 10 \quad 9 -10 \end{array}$$

8.) $x^2 - 15x + k, k > 0$
 $14 \quad 54$
 $26 \quad 36$
 36
 44
 50

-1 -14
 -2 -13
 -3 -12
 -4 -11
 -5 -10
 -6 -9
 -7 -8

3.) $x^2 + kx - 24$
 ± 23
 ± 10
 ± 5
 ± 2

$$\begin{array}{r|l} -24 & \\ \hline -1 & 24 \quad 1 -24 \\ -2 & 12 \quad 2 -12 \\ -3 & 8 \quad 3 -8 \\ -4 & 6 \quad 4 -6 \end{array}$$

9.) $x^2 - 6x + k, k > 0$
 5
 8
 9

-1 -5
 -2 -4
 -3 -3

4.) $x^2 + kx + 24$
 ± 25
 ± 14 ± 10
 ± 11

$$\begin{array}{r|l} 24 & \\ \hline \pm 1 & \pm 24 \\ \pm 2 & \pm 12 \\ \pm 3 & \pm 8 \\ \pm 4 & \pm 6 \end{array}$$

10.) $x^2 + 3x + k, k > 0$
 2

1 2

5.) $x^2 + kx - 12$
 ± 11
 ± 4
 ± 1

$$\begin{array}{r|l} -12 & \\ \hline -1 & 12 \quad 1 -12 \\ -2 & 6 \quad 2 -6 \\ -3 & 4 \quad 3 -4 \end{array}$$

11.) $x^2 + 8x + k, k > 0$
 7
 12
 15
 16

1 7
 2 6
 3 5
 4 4

6.) $x^2 + kx + 40$
 ± 41
 ± 22
 ± 14
 ± 13

$$\begin{array}{r|l} 40 & \\ \hline \pm 1 & \pm 40 \\ \pm 2 & \pm 20 \\ \pm 4 & \pm 10 \\ \pm 5 & \pm 8 \end{array}$$

12.) $x^2 - 7x + k, k > 0$
 6
 10
 12

-1 -6
 -2 -5
 -3 -4

Solve the following equations without using a calculator. Make sure your fractions are simplified.

1. $\frac{2x}{4x} - \frac{1}{4} = \frac{1}{4}$

2. $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

3. $\frac{5}{20} \frac{1}{x} + \frac{6}{10} \frac{12}{20} = \frac{17}{20}$

4. $\frac{5}{10} \frac{1}{2} + \frac{2}{10} = \frac{7}{10}$

5. $\frac{4}{6} \frac{2}{x} - \frac{1}{2} \frac{2}{6} = \frac{1}{6}$

6. $\frac{10}{15} \frac{2}{x} + \frac{4}{5} \frac{10}{15} = \frac{22}{15} = 1\frac{7}{15}$

7. $\frac{1}{2} \times \frac{2x}{5} = \frac{2}{5}$

8. $\frac{3}{1} \times \frac{2}{x} = 2$

9. $\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$

10. $\frac{5}{10} \frac{1}{2} - \frac{4}{10} = \frac{1}{10}$

11. $\frac{18}{20} \frac{9}{10} - \frac{1}{4} \frac{5}{20} = \frac{13}{20}$

12. $\frac{12}{10} \frac{3}{5} - \frac{1}{4} \frac{4}{10} = \frac{7}{20}$

13. $\frac{2}{3} \times \frac{2}{5} = \frac{4}{15}$

14. $\frac{6}{15} \frac{2}{5} + \frac{1}{3} \frac{5}{15} = \frac{11}{15}$

15. $\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$

16. $\frac{4}{5} \div \frac{2}{3} = \frac{6}{5} \text{ or } 1\frac{1}{5}$
(Handwritten: $\frac{2 \cancel{4}}{5} \cdot \frac{3}{\cancel{2}}$)

Simplify each of the following exponential expressions

1. $(x^6)^{1/6} \times$

2. $(x^{10})^{1/5} \times^2$

3. $(y^8)^{1/4} y^2$

4. $(z^{12})^{1/4} z^3$

5. $(x^{1/4})^{1/3} \times^{1/12}$

6. $(x^{3/2})^{1/5} \times^{3/10}$

7. $(x^3 y^6)^{1/3} \times y^2$

8. $(2^{16} x^4 y^8)^{1/4} = 2^4 \times y^2 = 16xy^2$

9. $y^{2/3} \cdot y^{7/3} y^3$

10. $a^{3/5} \cdot a^{7/5} a^2$

$$11. (x^4y)^{1/2} \quad x^2y^{1/2}$$

$$12. (a^{1/2}b^{1/3})^2 \quad ab^{2/3}$$

$$13. \frac{10x^{2/5}}{5x^{3/5}} \quad \frac{2}{x^{1/5}}$$

$$14. \frac{3x^{4/3}}{12x^{2/3}} \quad \frac{x^{2/3}}{4}$$

$$15. (4x^{3/7}y^{4/5})(7x^{2/7}y^{4/5})$$

$$28x^{5/7}y^{8/5}$$

$$16. (5x^{4/9}y^{3/5})(2x^{2/9}y^{2/5})$$

$$10x^{2/3}y$$

$$17. (3a^{-1/3}b^{-3/4})^{12}$$

$$\frac{3^{12}}{a^4b^9}$$

$$18. (4a^{-3/7}b^{-2/3})^{21}$$

$$\frac{4^{21}}{a^9b^{14}}$$

$$19. (2^{3/4}x^{-2/5}y^{1/10})^{20}$$

$$\frac{2^{15}y^2}{x^8}$$

$$20. (5^{5/6}x^{2/3}y^{-1/4})^{12}$$

$$\frac{5^{10}x^8}{y^3}$$