

Final Review #1 - Factoring (Unit 8)

Identify the missing factor from the problem.

1) $(4x^2y)(\underline{\quad? \quad}) = 20x^3y^2$

$$\frac{20x^3y^2}{4x^2y} = \boxed{5xy}$$

3) $(4x)(\underline{\quad? \quad}) = -16xy^2$

$$\frac{-16xy^2}{4x} = \boxed{-4y^2}$$

Evaluate the quadratic equation.

5) Given $f(x) = 2x^2 - 5$, find $f(-1)$

$$\begin{aligned} f(-1) &= 2(-1)^2 - 5 \\ &= 2(1) - 5 \\ &= 2 - 5 \end{aligned}$$

Factor.

$$\boxed{f(-1) = -3}$$

7) $n^2 + 5n - 24$

$$(n+8)(n-3)$$

9) $x^2 + 3x - 10$

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

2) $(-3a^2bc^3)(\underline{\quad? \quad}) = 18a^2b^3c^4$

$$\frac{18a^2b^3c^4}{-3a^2bc^3} = \boxed{-6b^2c}$$

4) $(x^2yz)(\underline{\quad? \quad}) = -3x^2y^2z$

$$\frac{-3x^2y^2z}{x^2yz} = \boxed{-3y}$$

6) Given $f(x) = 7 - x^2$, find $f(3)$

$$\begin{aligned} f(3) &= 7 - (3)^2 \\ &= 7 - 9 \end{aligned}$$

$$\boxed{f(3) = -2}$$

8) $n^2 + n - 20$

$$(n+5)(n-4)$$

10) $n^2 - 2n - 48$

$$(n-8)(n+6)$$

GCF 11) $-21a^2 + 28a$

$$-7a(3a+4)$$

GCF 12) $-24p + 16$

$$-8(3p-2)$$

GCF 13) $-2m^2 - 4m^2n^4$

$$-2m^2(1+2n^4)$$

GCF 14) $30xy + 12x^2$

$$6x(5y+2x)$$

$$15) 4r^2 - 52r + 168$$

$$4(r^2 - 13r + 42)$$

$$4(r-6)(r-7)$$

GCF & factor

$$16) -2x^3 + 30x^2 - 112x$$

$$-2x(x^2 - 15x + 56)$$

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

$$17) -6v^3 + 84v^2 - 288v$$

$$-6v(v^2 - 14v + 48)$$

$$-6v(v-6)(v-8)$$

$$18) -3x^2 - 9x + 120$$

$$-3(x^2 + 3x - 40)$$

$$-3(x+8)(x-5)$$

$$19) n^2 - 81$$

$$(n-9)(n+9)$$

$$20) 4n^2 - 64$$

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

$$4(n-4)(n+4)$$

$$21) b^2 - 25$$

$$(b-5)(b+5)$$

$$22) 2n^2 - 98$$

$$2(n^2 - 49)$$

$$2(n-7)(n+7)$$

$$23) 7k^2 + 31k - 20$$

$$k^2 + 31k - 140$$

$$(k + \frac{35}{7})(k - 4)$$

$$(k+5)(7k-4)$$

$$24) 3k^2 - 7k - 10$$

$$k^2 - 7k - 30$$

$$(k - \frac{10}{3})(k + \frac{3}{3})$$

$$(3k-10)(k+1)$$

$$25) 3m^2 + 34m + 80$$

$$m^2 + 34m + 240$$

$$(m + \frac{24}{3})(m + \frac{10}{3})$$

$$(m+8)(3m+10)$$

$$26) 3a^2 - 16a - 35$$

$$a^2 - 16a - 105$$

$$(a - \frac{21}{3})(a + \frac{5}{3})$$

$$(a-7)(3a+5)$$

27) A rectangle has a width of $x - 2$ and a length of $3x - 1$. The area is 90 in^2 . Write a polynomial equation to represent the area of the rectangle.

$$A = L \cdot W$$

$$90 = (3x-1)(x-2)$$

$$90 = 3x^2 - 6x - x + 2$$

$$90 = 3x^2 - 7x + 2$$

28) A rectangle has a width of $2x + 3$ and a length of $-4x - 3$. The area is 250 in^2 . Write a polynomial equation to represent the area of the rectangle.

$$A = L \cdot W$$

$$250 = (-4x-3)(2x+3)$$

$$250 = -8x^2 - 12x - 6x - 9$$

$$250 = -8x^2 - 18x - 9$$