

Name _____

Algebra 1: 8A

Date _____

Period _____

Review for Factoring Test

<p>1. Matt was taking a test on factoring, he was asked to find the GCF of $72x^8y^5$, $80x^4y^3$, and $64x^2y^3$. He gave an answer of $8x^4y^3$. Is this correct? If not give the correct answer.</p>	<p>2. A ceremonial red carpet is rectangular in shape and covers $2x^2 + 11x + 12$ square feet. If the width of the carpet is $(x + 4)$ feet, express the length, in feet.</p>
<p>3. What is the greatest common factor of $24a^2b$ and $18abc$?</p>	<p>4. Factor this quadratic expression: $x^2 + 18x - 63$</p>
<p>5. Factor: $6c^3d - 12c^2d^2 + 3cd$</p>	<p>6. Factor completely: $2x^3 - 14x^2 + 24x$</p>
<p>7. The greatest common factor for: $4xy^2 + 16x^2y - 28x^2y^2$ is $4xy$. True or False.</p>	<p>8. Factor the following completely: $4x^2 + 28x + 40$</p>
<p>9. The factors of $x^2 + x - 6$ are?</p>	<p>10. Factor: $3x^2 - 13x - 10$</p>

<p>11. When the expressions $x^2 - 9$ and $x^2 - 5x + 6$ are factored, a common factor is:</p> <p>(a) x^2 (b) $x + 3$ (c) $x - 3$ (d) $x - 2$</p>	<p>12. Factor completely: $3x^4 - 243$</p>
<p>13. A teacher is writing a test on factoring. The teacher wants students to find the GCF of $45x^4y^8$, $120x^2y^6$, and $75x^6y^4$. What is the correct answer?</p> <p>(a) $15x^2y^4$ (b) $15x^6y^8$ (c) $45x^2y^4$ (d) $120x^6y^8$</p>	<p>14. Factor completely: $x^4 - 4x^2$</p>
<p>15. Factor: $6x^2 + 11x - 10$</p>	<p>16. Factor: $y^2 - 100$</p>
<p>17. Factored completely, the trinomial $2x^2 - 10x - 12$ is?</p>	<p>18. Eloise was taking a quiz on factoring monomials. Question 5 asked her to find the GCF of $18a^3b^4$ and $27a^5b^2$. She gave an answer of $6a^5b^4$. Is this correct? If not, give the correct answer.</p>

19. The amount of paint needed to cover a wall is proportional to its area. The wall is rectangular and has an area of $(6a^2 + 12a)$ square meters. Factor this polynomial to find possible expressions for the length and width of the wall.

- a) $6a(a + 2)$; possible dimensions:
6a meters by $(a + 2)$ meters
- b) $6a^2(a + 2)$; possible dimensions:
 $6a^2$ meters by $(a + 2)$ meters
- c) $6(a + 2a)$; possible dimensions:
6 meters by $(a + 2a)$ meters
- d) $6a(6a + 12)$; possible dimensions:
6a meters by $(6a + 12)$ meters

20. Which expression is not equivalent to the polynomial $6x^3 + 15x^2 - 9x$?

- a) $3(2x^3 + 5x^2 - 3x)$
- b) $3x(2x^2 + 5x - 3)$
- c) $3x(x + 3)(x - 1)$
- d) $3x(2x - 1)(x + 3)$

21. Factor: $9x^2 - 16$

22. Factor: $4a^2 - b^2$

23. A plot of land is rectangular and has an area of $(x^2 - 5x - 24)$ m². The length is $(x + 3)$ m. Find the width of the plot.

24. Which of the following polynomials have a common binomial factor?

- a) $(x^2 + 4)$ and $(x^2 + 4x + 4)$
- b) $(x^2 + 4)$ and $(x^2 - 4x + 4)$
- c) $(x^2 - 4)$ and $(x^2 + 4x - 4)$
- d) $(x^2 - 4)$ and $(x^2 + 4x + 4)$

25. The perimeter of a rhombus is $12x + 28$ feet. Factor this expression. Then find the length of one side if $x = 8$.

26. Solve for x: $2(x-4)+6=12$

27. Factor Completely & explain each step.

$$2x^2 + 6x - 36$$

28. Factor Completely & explain each step.

$$2x^2 - 162$$

29. How many solutions does the following equation have?

$$3x + 2(x + 4) = 5x + 8$$

30. How many solutions does the following equation have?

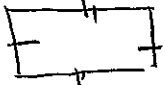
$$7x + 5 = 7x - 6$$

Review for Factoring Test

1. Matt was taking a test on factoring, he was asked to find the GCF of $72x^8y^5$, $80x^4y^3$, and $64x^2y^3$. He gave an answer of $8x^4y^3$. Is this correct? If not give the correct answer.

No, it should be $8x^2y^3$
 NOT x^4

2. A ceremonial red carpet is rectangular in shape and covers $2x^2 + 11x + 12$ square feet. If the width of the carpet is $(x + 4)$ feet, express the length, in feet.



$A = L \cdot W$
 $2x^2 + 11x + 12 = L \cdot (x + 4)$
 $(2x + 6)(x + 2) = L(x + 4)$
 $(x + 4)(2x + 3) = L(x + 4)$
 $L = 2x + 3$

3. What is the greatest common factor of $24a^2b$ and $18abc$?

$6ab$

4. Factor this quadratic expression: $x^2 + 18x - 63$

Tri $(x + 21)(x - 3)$

5. Factor: $6c^3d - 12c^2d^2 + 3cd$

GCMF $3cd(2c^2 - 4cd + 1)$

6. Factor completely: $2x^3 - 14x^2 + 24x$

GCMF $2x(x^2 - 7x + 12)$
 Tri $2x(x - 4)(x - 3)$

7. The greatest common factor for: $4xy^2 + 16x^2y - 28x^2y^2$ is $4xy$. True or False.

8. Factor the following completely: $4x^2 + 28x + 40$

GCMF $4(x^2 + 7x + 10)$
 Tri $4(x + 5)(x + 2)$

9. The factors of $x^2 + x - 6$ are?

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

10. Factor: $3x^2 - 13x + 10$

$(\frac{3x - 15}{3})(\frac{3x + 2}{3})$ Tri
 Tri
 $(x - 5)(3x + 2)$

11. When the expressions $x^2 - 9$ and $x^2 - 5x + 6$ are factored, a common factor is:

(a) x^2
 (b) $x + 3$
 (c) $x - 3$
 (d) $x - 2$

$$\begin{array}{c|c} x^2 - 9 & x^2 - 5x + 6 \\ \hline (x+3)(x-3) & (x-3)(x-2) \\ \hline \text{DOPS} & \text{Tri} \end{array}$$

12. Factor completely: $3x^4 - 243$

GCMF $3(x^4 - 81)$
 DOPS $3(x^2 + 9)(x^2 - 9)$
 DOPS $3(x^2 + 9)(x + 3)(x - 3)$

13. A teacher is writing a test on factoring. The teacher wants students to find the GCF of $45x^4y^8$, $120x^2y^6$, and $75x^6y^4$. What is the correct answer?

- (a) $15x^2y^4$
 (b) $15x^6y^8$
 (c) $45x^2y^4$
 (d) $120x^6y^8$

14. Factor completely: $x^4 - 4x^2$

GCMF $x^2(x^2 - 4)$
 DOPS $x^2(x + 2)(x - 2)$

15. Factor: $6x^2 + 11x - 10$

$\frac{(6x+15)}{3} \frac{(6x-4)}{2}$ Tricky
 $\frac{(2x+5)}{1} \frac{(3x-2)}{1}$ Tri

16. Factor: $y^2 - 100$

DOPS $(y + 10)(y - 10)$

17. Factored completely, the trinomial $2x^2 - 10x - 12$ is?

GCF $2(x^2 - 5x - 6)$
 Tri $2(x - 6)(x + 1)$

18. Eloise was taking a quiz on factoring monomials. Question 5 asked her to find the GCF of $18a^3b^4$ and $27a^5b^2$. She gave an answer of $6a^5b^4$. Is this correct? If not, give the correct answer.

No. It should be

$9a^3b^2$

19. The amount of paint needed to cover a wall is proportional to its area. The wall is rectangular and has an area of $(6a^2 + 12a)$ square meters. Factor this polynomial to find possible expressions for the length and width of the wall.

- a) $6a(a + 2)$; possible dimensions: $A = LW$
 $6a$ meters by $(a + 2)$ meters
 b) $6a^2(a + 2)$; possible dimensions: $6a^2 + 12a = LW$
 $6a^2$ meters by $(a + 2)$ meters
 c) $6(a + 2a)$; possible dimensions: $6a(a + 2)$
 6 meters by $(a + 2a)$ meters
 d) $6a(6a + 12)$; possible dimensions:
 $6a$ meters by $(6a + 12)$ meters

20. Which expression is not equivalent to the polynomial $6x^3 + 15x^2 - 9x$? Guess + check

- a) $3(2x^3 + 5x^2 - 3x) = 6x^3 + 15x^2 - 9x$ ✓
 b) $3x(2x^2 + 5x - 3) = 6x^3 + 15x^2 - 9x$ ✓
 c) $3x(x + 3)(x - 1)$ ✓
 d) $3x(2x - 1)(x + 3)$

$(x+3)(x-1)$
 $x^2 - x + 3x - 3$
 $3x(x^2 + 2x - 3)$
 $3x^3 + 6x^2 - 9x$
 $3x(2x^2 + 5x - 3)$
 $3x(\frac{2x}{2} + \frac{6}{2})(2x - 1)$
 $3x(x + 3)(2x - 1)$

21. Factor: $9x^2 - 16$

DOPS $(3x + 4)(3x - 4)$

22. Factor: $4a^2 - b^2$

DOPS $(2a + b)(2a - b)$


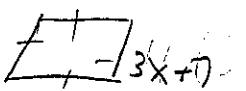
23. A plot of land is rectangular and has an area of $(x^2 - 5x - 24)$ m². The length is $(x + 3)$ m. Find the width of the plot.

$A = LW$
 $A = x^2 - 5x - 24$
 $L = x + 3$
 $W = ?$
 $x^2 - 5x - 24 = (x + 3)w$
 $\frac{x^2 - 5x - 24}{x + 3} = \frac{(x + 3)w}{x + 3}$
 $(x - 8)(x + 3) = w(x + 3)$
 $w = x - 8$

24. Which of the following polynomials have a common binomial factor?

- a) $(x^2 + 4)$ and $(x^2 + 4x + 4)$
 b) $(x^2 + 4)$ and $(x^2 - 4x + 4)$
 c) $(x^2 - 4)$ and $(x^2 + 4x - 4)$
 d) $(x^2 - 4)$ and $(x^2 + 4x + 4)$ → $(x + 2)(x + 2)$
 $x^2 - 4$ Common → $(x + 2)(x - 2)$

25. The perimeter of a rhombus is $12x + 28$ feet. Factor this expression. Then find the length of one side if $x = 8$.



 $P = 12x + 28$
 $P = 4(3x + 7)$ GCMF
 $3x + 7$
 $3(8) + 7$
 $24 + 7$
 31 ft

The length of one side is $3x + 7$

26. Solve for x: $2(x-4)+6=12$

$$2x - 8 + 6 = 12$$

$$2x - 2 = 12$$

$$\begin{array}{r} +2 \quad +2 \\ \hline 2x = 14 \\ \frac{2}{2} \quad \frac{2}{2} \end{array}$$

$$\boxed{x=7}$$

27. Factor Completely & explain each step.

$$2x^2 + 6x - 36 \quad \underline{\text{GCMF}}$$

$$2(x^2 + 3x - 18)$$

$$2(x+6)(x-3) \quad \underline{\text{Trinomial Factoring}}$$

28. Factor Completely & explain each step.

$$2x^2 - 162 \quad \underline{\text{GCMF}}$$

$$2(x^2 - 81)$$

$$2(x+9)(x-9) \quad \underline{\text{DOPS}}$$

29. How many solutions does the following equation have?

$$3x + 2(x+4) = 5x + 8$$

$$3x + 2x + 8 = 5x + 8$$

$$\begin{array}{r} 5x + 8 = 5x + 8 \\ -5x \quad -5x \\ \hline 8 = 8 \checkmark \end{array}$$

Infinitely many

~~x~~ must move the variables 1st
to compare the constants

30. How many solutions does the following equation have?

$$7x + 5 = 7x - 6$$

$$\begin{array}{r} 7x + 5 = 7x - 6 \\ -7x \quad -7x \\ \hline 5 \neq -6 \end{array}$$

$$5 \neq -6$$

Zero or None