

Test 3 (Chapter 5) REVIEW

Questions from Chapter 5

Factor:

1. $10x^6 - 6x^8$ Pull out GCF

$$\boxed{2x^6(5 - 3x^2)}$$

2. $24v^4w^4 + 4vw^2$ Pull out GCF

$$\boxed{4vw^2(6v^3w^2 + 1)}$$

3. $45x^6y^{55} + 10x^{18}y^{15} + 55x^{24}y^{35}$

Pull out GCF

$$\boxed{5x^6y^{15}(9y^{40} + 2x^{12} + 11x^{18}y^{20})}$$

4. $2x^2 + 8x + 3x + 12$

Grouping

$$2x^2 + 8x \quad + 3x + 12$$

$$2x(x+4) \quad + 3(x+4)$$

$$\boxed{(x+4)(2x+3)}$$

$$\sqrt{(x+4)(2x+3)}$$

$$2x^2 + 3x + 8x + 12$$

5. $7x^3 - 21x^2 + x - 3$

Grouping

$$7x^3 - 21x^2 \quad + x - 3$$

$$7x^2(x-3) \quad + 1(x-3)$$

$$\boxed{(x-3)(7x^2+1)}$$

$$\sqrt{(x-3)(7x^2+1)}$$

$$7x^3 + 1x - 21x^2 - 3$$

6. $15y^2 - 10yz + 6y - 4z$

Grouping

$$15y^2 - 10yz \quad + 6y - 4z$$

$$5y(3y - 2z) \quad + 2(3y - 2z)$$

$$\boxed{(3y-2z)(5y+2)}$$

$$\sqrt{(3y-2z)(5y+2)}$$

$$15y^2 + 6y - 10yz - 4z$$

7. $x^2 + 11x + 30$

$$\boxed{(x+6)(x+5)}$$

✓ $(x+6)(x+5)$
 $x^2 + 5x + 6x + 30$
 $x^2 + 11x + 30$

8. $x^2 - 8x + 16$

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

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

9. $x^2 - x - 6$

$$\boxed{(x-3)(x+2)}$$

✓ $(x-3)(x+2)$
 $x^2 + 2x - 3x - 6$
 $x^2 - x - 6$

10. $4c^2 + 12c + 9$ ^{+36 Mult} ^{+12 Add} _{+6 +6}

$$\frac{4c^2 + 6c}{4c^2 + 6c} \quad \frac{+6c + 9}{+6c + 9}$$

$$2c(2c+3) \quad +3(2c+3)$$

$$\boxed{(2c+3)(2c+3)} \text{ or } \boxed{(2c+3)^2}$$

11. $9n^2 - 9n - 10$ ^{-90 Mult} ^{-9 Add} _{+5 +6}

$$\frac{9n^2 + 6n}{9n^2 + 6n} \quad \frac{-15n - 10}{-15n - 10}$$

$$3n(3n+2) \quad -5(3n+2)$$

$$3n(3n+2) \quad -5(3n+2)$$

$$\boxed{(3n+2)(3n-5)}$$

12. $12x^2 + 19x + 5$ ^{+60 Mult} ^{+19 Add} _{+5 +4}

$$\frac{12x^2 + 4x}{12x^2 + 4x} \quad \frac{+15x + 5}{+15x + 5}$$

$$4x(3x+1) \quad +5(3x+1)$$

$$4x(3x+1) \quad +5(3x+1)$$

$$\boxed{(3x+1)(4x+5)}$$

13. $16z^2 - 25$

$$\sqrt{16z^2} \quad \sqrt{25}$$

$$4z \quad 5$$

$$\boxed{(4z+5)(4z-5)}$$

✓ $(4z+5)(4z-5)$
 $16z^2 - 20z + 20z - 25$

14. $2b^2 - 2c^2$

$$2(b^2 - c^2)$$

$$\boxed{2(b-c)(b+c)}$$

✓ $2(b-c)(b+c)$
 $(b^2 + bc - bc + c^2)$
 $2(b^2 - c^2)$
 $2b^2 - 2c^2$

Solve:

15. $x^2 - 8x = 0$

$$x(x-8) = 0$$

$$\boxed{x=0} \quad \begin{array}{r} x-8=0 \\ +8 \quad +8 \\ \hline x=8 \end{array}$$

16. $x^2 - 4x - 5 = 0$

$$(x-5)(x+1) = 0$$

$$\begin{array}{r} x-5=0 \\ +5 \quad -5 \\ \hline x=5 \end{array} \quad \begin{array}{r} x+1=0 \\ -1 \quad -1 \\ \hline x=-1 \end{array}$$

Solve:

17. $3x^2 + 2x - 8 = 0$ -24 mult
+2 Add $16 \quad -4$

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

$$\begin{array}{r} 3x^2 + 6x \quad -4x - 8 \\ 3x(x+2) \quad -4(x+2) \end{array}$$

$$(x+2)(3x-4) = 0$$

$$\begin{array}{r} x+2=0 \\ -2 \quad -2 \\ \hline x=-2 \end{array} \quad \begin{array}{r} 3x-4=0 \\ +4 \quad +4 \\ \hline 3x=4 \\ \frac{3}{3} \quad \frac{3}{3} \\ \hline x=\frac{4}{3} \end{array}$$

19. Simplify: $\frac{x^2 - x - 56}{x^2 - 49}$

$$\frac{(x-8)(x+7)}{(x-7)(x+7)}$$

$$\boxed{\frac{x-8}{x-7}}$$

18. $4x^2 + 3x - 1 = 0$ -4 mult
+3 Add $+4 \quad -1$

$$4x^2 + 4x - 1x - 1$$

$$\begin{array}{r} 4x^2 + 4x \quad -1x - 1 \\ 4x(x+1) \quad -1(x+1) \end{array}$$

$$(x+1)(4x-1) = 0$$

$$\begin{array}{r} x+1=0 \\ -1 \quad -1 \\ \hline x=-1 \end{array} \quad \begin{array}{r} 4x-1=0 \\ +1 \quad +1 \\ \hline 4x=1 \\ \frac{4}{4} \quad \frac{1}{4} \\ \hline x=\frac{1}{4} \end{array}$$

20. Simplify: $\frac{x^2 - 4x - 12}{2x^2 - 15x + 18}$

$$2x^2 - 15x + 18$$
 +36
-15 $-12 \quad -3$

$$\begin{array}{r} 2x^2 - 12x \quad -3x + 18 \\ 2x^2 - 12x \quad -3x + 18 \end{array}$$

$$2x(x-6) - 3(x-6)$$

$$(x-6)(2x-3)$$

$$\frac{(x-6)(x+2)}{(x-6)(2x-3)}$$

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

$$\boxed{\frac{x+2}{2x-3}}$$

21. Two machines can complete 8 tasks every 3 days. Let t represent the number of tasks these machines can complete in a 30-day month. Write a proportion to show this example.

$$\begin{array}{l} \text{Tasks} \\ \text{Days} \end{array} \quad \boxed{\frac{8}{3} = \frac{t}{30}}$$

22. Simplify: $7x + 8(x - 3)$

$$\begin{aligned} &7x + 8(x - 3) \\ &7x + 8x - 24 \\ &\boxed{15x - 24} \end{aligned}$$

23. Convert to scientific notation: 0.000023

$$\boxed{2.3 \times 10^{-5}}$$

24. Solve: $2x - 10 < -8$

$$\begin{aligned} &\underline{+10} \quad \underline{+10} \\ &2x < 2 \\ &\frac{2x}{2} < \frac{2}{2} \\ &\boxed{x < 1} \end{aligned}$$

25. Simplify: $(a^2b^4)^3(a^3b^4)$

$$\begin{aligned} &a^6b^{12} a^3b^4 \\ &\boxed{a^9b^{16}} \end{aligned}$$

26. Simplify: $|8 + (-14)| + 9$

$$|8 + (-14)| + 9$$

$$|-6| + 9$$

$$6 + 9$$

$$\boxed{15}$$

27. Solve for t: $x = -8z + 7t$

$$x = -8z + 7t$$

$$\begin{array}{r} +8z \\ \hline \end{array} \quad \begin{array}{r} +8z \\ \hline \end{array}$$

$$\begin{array}{r} x + 8z = 7t \\ \hline \end{array}$$

$$\boxed{t = \frac{x + 8z}{7} = \frac{1}{7}x + \frac{8}{7}z}$$

28. Find the y-intercept for: $-5x + 8y = -8$

$$\begin{array}{c|c} x & y \\ \hline 0 & -1 \end{array}$$

$$-5(0) + 8y = -8$$

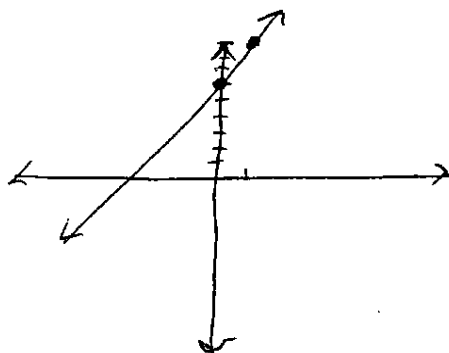
$$\frac{8y}{8} = \frac{-8}{8}$$

$$\boxed{y = -1}$$

$$(0, -1)$$

29. Graph: $y = 3x + 6$

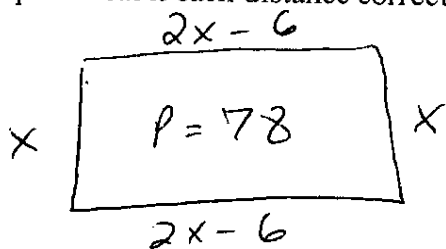
$$m = \frac{3}{1} \uparrow 3 \quad b = 6$$



30. The length of a rectangular pool is 6 less than twice the width. The perimeter of the pool is 78 feet. Find the length and width of the pool. Label each distance correctly.

$$W = \underline{x} \quad \begin{array}{l} \text{width} \\ \text{width} \end{array} \quad \text{width} = \boxed{15}$$

$$L = \underline{2x - 6} \quad \begin{array}{l} 2(15) - 6 \\ \text{length} \end{array} \quad \text{length} = \boxed{24}$$



$$x + 2x - 6 + x + 2x - 6 = 78$$

$$6x - 12 = 78$$

$$\begin{array}{r} +12 \\ \hline \end{array} \quad \begin{array}{r} +12 \\ \hline \end{array}$$

$$\frac{6x}{6} = \frac{90}{6}$$

$$x = 15$$

Check

$$\begin{array}{c} 15 \quad 24 \quad 15 \\ \hline 24 \end{array}$$

$$15 + 24 + 15 + 24 = \boxed{78}$$