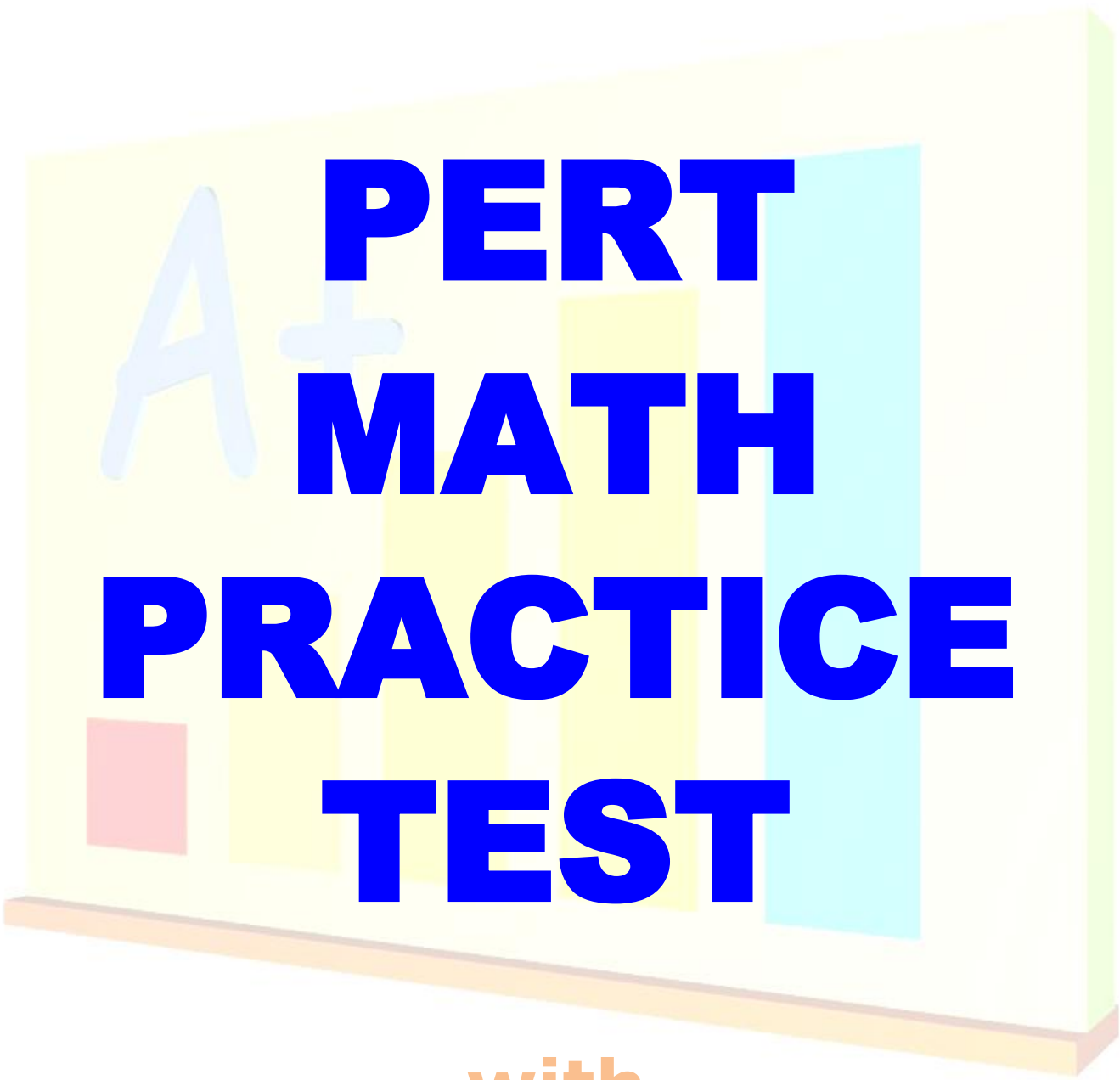


# PERT MATH PRACTICE TEST

## with answer key scoring guide and solution guide

Below is a full-length, 30-question, PERT math practice test to help you with preparing for the math section of the Florida PERT Placement Test. Circle the correct answer choice for each question. Upon completion of this practice test, check the **answer key** and **PERT scoring guide** provided. The scoring guide will help you determine your possible score on the math section of the actual PERT placement test. There is also a solution guide provided on pages 6 – 8.

**DO NOT USE A CALCULATOR WHILE WORKING ON THIS PRACTICE TEST. CALCULATORS CANNOT BE USED ON THE MATH SECTION OF THE ACTUAL PERT PLACEMENT TEST.**

## 30 PERT MATH PRACTICE QUESTIONS

1. Evaluate: $2xy^2 - 3xy - 7$ if $x = -4$ and $y = 5$.

   a. $-147$

   b. $-133$

   c. $233$

   d. $1653$

2. Solve for $y$: $4-(y-5)-(y+3)=2$

   a. $-\frac{25}{2}$

   b. $-5$

   c. $2$

   d. $\frac{19}{5}$

3. Simplify: $6-4[3(2x+5)-4x]$

   a. $4x+30$

   b. $8x+30$

   c. $8x+42$

   d. $-8x-54$

4. Solve for $x$: $0.2(2x-1) = 0.2x + 0.08$

   a. $1.4$

   b. $5$

   c. $-2$

   d. $0.\overline{3}$

5. Find all solutions of $5-2x+7 \geq 6$.

   a. $x \geq -3$

   b. $x \leq 3$

   c. $x \geq 3$

   d. $x \leq -3$

6. Solve the formula $3x + 4y = 12$, for $y$.

   a. $4y = 12 - 3x$

   b. $y = \frac{9}{4}$

   c. $y = -3x - 8$

   d. $y = -\frac{3}{4}x + 3$

7. Solve the equation: $\frac{x-4}{x} = \frac{3}{5}$

a. $x = -5$

b. $x = -6$

c. $x = 10$

d. $x = 2$

8. Set up the equation that can be used to solve the following: "Eight less than the square of a number is the same as adding the number and four." *Use x to represent the unknown number.*

a. $8 - x^2 = x + 4$

b. $x^2 - 8 = x + 4$

c. $2x - 8 = x + 4$

d. $8 - 2x = x + 4$

9. The perimeter of a rectangular swimming pool is 30 meters. The width of the pool is 3 meters less than its length; find the width of this swimming pool.

a. 10 meters

b. 9 meters

c. 6 meters

d. 3 meters

10. Jose books for the semester cost $432.00. How much tax will he pay if the tax rate is 7%?

a. $61.71

b. $28.00

c. $302.40

d. $30.24

11. Simplify: $(-8x^4y^3)(-6xy^{-7})$

a. $-48x^4y^{-7}$

b. $-48x^4y^{-10}$

c. $\frac{48x^5}{y^4}$

d. $\frac{-48x^4}{y^3}$

12. Write the number 37,120,000 using scientific notation.

a. $3.712 \times 10^7$

b. $3.712 \times 10^{-7}$

c. $37.12 \times 10^{-7}$

d. $37.12 \times 10^6$

13. Divide: $\frac{9x^2y - 12xy^2 + 3xy}{3xy}$

a. $6x - 9y$

b. $3x - 4y$

c. $3x - 4y + 1$

d. $3x^2 - 4y + xy$

14. Subtract: $(7x^3 - 6x^2 + 2x) - (5x^2 + 8x - 3)$

a. $7x^3 - 11x^2 - 6x + 3$

b. $-3x$

c. $7x^3 - 11x^2 + 10x - 3$

d. $-4x^3 + 10x - 3$

15. Multiply: $(2m-5n)(4m+n)$

a. $8m^2-5n^2$

b. $8m^2-18mn-5n^2$

c. $8m^2+5n^2$

d. $8m^2+18mn+5n^2$

16. Multiply: $(4n-3)^2$

a. $16n^2+9$

b. $16n^2-24n+9$

c. $16n^2-9$

d. $8n^2-6$

17. Find the product for $(2k^2-6k+9)(k+3)$

a. $2k^3-12k^2+9k+27$

b. $2k^3-9k+27$

c. $2k^3-12k^2-27k-27$

d. $2k^3+9k^2-9k-27$

18. Factor completely: $4x^2-16$

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

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

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

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

19. Factor completely: $9x^2-6x+4$

a. $(3x-2)^2$

b. $(3x+2)^2$

c. $(3x-2)(3x+2)$

d. $(9x-2)(x-2)$

20. Factor completely: $4x^3+12x^2+x+3$

a. $(x+3)(4x^2+1)$

b. $4x^2(x+3)$

c. $4(x-3)(4x^2-1)$

d. $(x+3)(2x+1)^2$

21. What is one factor of the trinomial $3x^2-2x-8$?

a. $x+2$

b. $3x-2$

c. $x-8$

d. $3x+4$

22. What is one solution of $4a^2+20a=0$?

a. $a=-20$

b. $a=-5$

c. $a=4$

d. $a=5$

23. Solve the equation: $x^2 - 10x + 24 = 0$

a. $x = -12$ *or* $2$

b. $x = -6$ *or* $-4$

c. $x = 6$ *or* $4$

d. $x = 2$ *or* $12$

24. Simplify: $\dfrac{x^2 - 4x + 4}{x^2 - 5x + 6}$

a. $\dfrac{4x + 4}{5x + 6}$

b. $\dfrac{x + 2}{x + 3}$

c. $\dfrac{2}{3}$

d. $\dfrac{x - 2}{x - 3}$

25. Simplify: $\sqrt{27a^8b^7}$

a. $3a^4b^3\sqrt{3b}$

b. $3a^2b^3\sqrt{3a^2b}$

c. $3a^3b^3\sqrt{3}$

d. $-3a^2b^3\sqrt{3a^2b}$

26. Multiply: $\left(\sqrt{6} - 4\right)\left(\sqrt{6} + 4\right)$

a. -10

b. $\sqrt{20}$

c. 22

d. $\sqrt{6} - 16$

27. Solve the system of two equations for $y$:

$$x + y = 8$$
$$2x - y = 10$$

a. $y = -4$

b. $y = 6$

c. $y = 4$

d. $y = 2$

28. Find the $x$-intercept for the graph:

$$4x - 3y = -12$$

a. $(4, -3)$

b. $(-3, 0)$

c. $(0, -3)$

d. $(-3, 4)$

29. Find the slope, $m$, of the line passing through the points $(-4, -3)$ and $(0, -2)$

a. $m = -\dfrac{2}{3}$

b. $m = 8$

c. $m = -4$

d. $m = \dfrac{1}{4}$

30. Find the standard form of the equation of a line that passes through the points $(1, 3)$ and $(-2, 5)$.

a. $y = 4x - 3$

b. $2x + 3y = 11$

c. $y = -\dfrac{4}{3}x - 1$

d. $2x - 3y = -4$

| ANSWER KEY FOR PERT MATH PRACTICE TEST | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Question** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| **Answer** | a | c | d | a | b | d | c | b | c | d | c | a | c | a | b | b | b | c | a | a | d | b | c | d | a | a | d | b | d | b |

The scoring guide below gives a good indication of your possible score on the actual PERT Math Test. Find the total correct in the # correct line, then see below to find your possible PERT Math score and suggestion.

| SCORING GUIDE FOR PERT MATH PRACTICE TEST | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PASSING (CREDIT MATH) SCORE RANGE: 113 - 150** | | | | | | | | |
| | **Low-Range** | | | | | | **Mid-Range** | **High-Range** |
| **# correct** | 0 1 2 3 | 4 5 6 | 7 8 9 | 10 11 12 | 13 14 15 | 16 17 18 | 19 20 21 22 | 23 24 25 26 27 28 29 30 |
| **Possible PERT Math Score** | 50 - 59 | 60 - 69 | 70 - 79 | 80 - 89 | 90 - 99 | 100 - 109 | 110 - 119 | 120 - 150 |
| **Suggestion** | Your score is in the range that suggests you need additional preparation before attempting the actual PERT Math test. Please take advantage of the solution guide provided below and any other resource(s) that will help you with your preparation for the test. | | | | | | Your score is in the borderline range; you may need more preparation before taking the actual PERT Math test. Please take advantage of the solution guide provided below and any other resource(s) that will help you with your preparation for the test. | Your score is in the high range; you may not need additional preparation before attempting the actual PERT Math test. Please review the ones, if any, you got incorrect and make note of your mistakes. |

## PERT Math Practice Test - Solution Guide

Below is a solution guide with detailed, step-by-step explanations of answers to our PERT Math practice test.

1. To evaluate $2xy^2 - 3xy - 7$, replace *x* with -4 and *y* with 5 and use the order of operations, G E MD AS to simplify.

Substitute $2(-4)(5)^2 - 3(-4)(5) - 7$

Do exponents $2(-4)(25) - 3(-4)(5) - 7$

Multiply next $-200 + 60 - 7$

Add/subtract $-147$

Choice a. $-147$

2. To solve $4 - (y - 5) - (y + 3) = 2$, remove ( ), collect like terms, and use the properties of equality to solve.

Distribute: $4 - y + 5 - y - 3 = 2$

Collect like terms: $-2y + 6 = 2$

Move 6 to opposite side: $-2y = 2 - 6$

Divide: $\frac{-2y}{-2} = \frac{-4}{-2}$

$y = 2$

Choice c. $y = 2$

3. To simplify the expression $6 - 4[3(2x + 5) - 4x]$, work inside [ ] to simplify expression, then distribute – 4 and continue to collect like terms.

Distribute 3 inside [ ] $6 - 4[6x + 15 - 4x]$

Combine like terms $6 - 4[2x + 15]$

Distribute -4 inside [ ] $6 - 8x - 60$

Combine like terms $-8x - 54$

Choice d. $-8x - 54$

4. To solve $0.2(2x - 1) = 0.2x + 0.08$, clear decimals by multiplying by 100, then continue to use the properties of equality to solve.

$100 \cdot [0.2(2x - 1)] = 100 \cdot (0.2x) + 100(0.08)$

$20(2x - 1) = 20x + 8$

$40x - 20 = 20x + 8$

$40x - 20x = 8 + 20$

$20x = 28$

$\frac{20x}{20} = \frac{28}{20} = \frac{14}{10}$

$x = 1.4$

Choice a. 1.4

5. To solve the inequality $5 - 2x + 7 \geq 6$, use the properties of inequalities, $(<, >, \leq, \geq)$ to solve.

Move 5 and 7: $-2x \geq 6 - 5 - 7$

Simplify right side: $-2x \geq -6$

Divide: $\frac{-2x}{-2} \geq \frac{-6}{-2}$

$x \leq 3$

**Note**: when dividing by a negative number in an inequality, you must remember to reverse your inequality symbol.

Choice b. $x \leq 3$

6. To solve the formula (literal equation) $3x + 4y = 12$, for *y*, use the properties of equality to isolate *y*.

$3x + 4y = 12$

$4y = -3x + 12$

$\frac{4y}{4} = \frac{-3x}{4} + \frac{12}{4}$

$y = -\frac{3}{4}x + 3$

Choice d. $y = -\frac{3}{4}x + 3$

7. To solve the proportion $\frac{x-4}{x} = \frac{3}{5}$, use cross multiplication and solve the resulting equation.

$3x = 5(x - 4)$

$3x = 5x - 20$

$3x - 5x = -20$

$\frac{-2x}{-2} = \frac{-20}{-2}$

$x = 10$

Choice c. $x = 10$

8. To translate "eight less than the square of a number is the same as adding the number and four," change the following phrases into math expressions.

"eight less than the square of a number" translates to: $x^2 - 8$

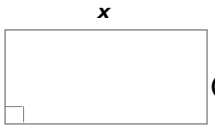
"is the same as" translates to: =

"adding the number and four" translates to: $x + 4$

Now, putting these expressions together gives: $x^2 - 8 = x + 4$

Choice b. $x^2 - 8 = x + 4$

9. To solve this word situation, sketch a diagram, set up an equation, solve the equation and answer the question.

Diagram: 


Set up equation: $2(x - 3) + 2x = 30$

Solve the equation:

$2x - 6 + 2x = 30$

$4x - 6 = 30$

$4x = 30 + 6$

$\frac{4x}{4} = \frac{36}{4}$

$x = 9$

Use 9 to replace *x* in the expression $(x - 3)$ to get $(9 - 3) = 6$ meters.

Choice c. 6 meters

10. To find the amount of tax to be paid on $432.00 at a 7% rate, multiply $432 by 7%.

Find $432 \times 0.07$

$$\begin{array}{r} {}^{2}4\ {}^{1}3\ 2 \\ \times \quad 7 \\ \hline 3\ 0\ 2\ 4 \end{array}$$

So the tax is $30.24.

Choice d. $30.24

11. To simplify $\left(-8x^4y^3\right)\left(-6xy^{-7}\right)$, use the rules of exponents.

$-8(-6) = 48$ and $x^4 \cdot x = x^5$

and $y^3 \cdot y^{-7} = y^{-4}$

Putting these together we get: $48x^5y^{-4}$

which rewrites to $\dfrac{48x^5}{y^4}$ when using positive exponents.

Choice c. $\dfrac{48x^5}{y^4}$

12. To write 37,120,000 using scientific notation, use the scientific notation form, $M \times 10^n$ where M is a number less than or equal to 1 and $n$ is an integer.

Placing the decimal point between 3 . 7 then count to the right, the number of places, 7, to get to the original decimal position.

Scientific notation: $3.712 \times 10^7$

**Note**: the exponent 7 is positive because we moved to the right, a positive direction.

Choice a. $3.712 \times 10^7$

13. To divide $\dfrac{9x^2y - 12xy^2 + 3xy}{3xy}$, separate the expression and divide each term as follows:

$$\frac{9x^2y}{3xy} - \frac{12xy^2}{3xy} + \frac{3xy}{3xy}$$

$$3x - 4y + 1$$

Choice c. $3x - 4y + 1$

14. To subtract these polynomials, use the distributive property to remove ( ), then combine like terms. Insert **1's** in front of ( ) to help with the distribution.

$$\mathbf{1}\left(7x^3 - 6x^2 + 2x\right) - \mathbf{1}\left(5x^2 + 8x - 3\right)$$

$$7x^3 - 6x^2 + 2x - 5x^2 - 8x + 3$$

$$7x^3 - 11x^2 - 6x + 3$$

Choice a. $7x^3 - 11x^2 - 6x + 3$

15. To multiply $(2m - 5n)(4m + n)$, use the distributive property.

$$2m(4m + n) - 5n(4m + n)$$
$$8m^2 + 2mn - 20mn - 5n^2$$
$$8m^2 - 18mn - 5n^2$$

Choice b. $8m^2 - 18mn - 5n^2$

16. To multiply $(4n - 3)^2$, use the special product technique of squaring a binomial to get a Perfect Square Trinomial (PsT), $a^2 + 2ab + b^2$.

Thus $(4n - 3)^2 = (4n)^2 + 2(4n)(-3) + (-3)^2$

$$= 16n^2 - 24n + 9$$

Choice b. $16n^2 - 24n + 9$

17. To find the product for $\left(2k^2 - 6k + 9\right)(k + 3)$, use the distributive property to multiply.

$$2k^2(k + 3) - 6k(k + 3) + 9(k + 3)$$
$$2k^3 + 6k^2 - 6k^2 - 18k + 9k + 27$$
$$2k^3 - 9k + 27$$

Choice b. $2k^3 - 9k + 27$

18. To factor $4x^2 - 16$ completely, first factor out the GCF, then factor using the difference of squares (DoS) method.

Factor out GCF: $4\left(x^2 - 4\right)$

Factor DoS: $x^2 - 4 = (x + 2)(x - 2)$

Rewrite final answer: $4(x + 2)(x - 2)$

Choice c. $4(x + 2)(x - 2)$

19. To factor completely: $9x^2 - 6x + 4$, use the Perfect Square Trinomial (PsT) method.

Check:
$$\begin{cases} 9x^2 = (3x)(3x) \\ 4 = (-2)(-2) \\ 2(3x)(-2) = -12x \end{cases}$$

Hence $9x^2 - 6x + 4$ is a perfect square trinomial (PsT), so we can factor as follows: $(3x - 2)^2$

Choice a. $(3x - 2)^2$

20. To factor $4x^3 + 12x^2 + x + 3$, use the grouping method of factoring.

Group in pairs: $\left(4x^3 + 12x^2\right) + (x + 3)$

GCF factor each pair: $4x^2(x + 3) + 1(x + 3)$

GCF with $(x + 3)$: $\left(4x^2 + 1\right)(x + 3)$

Choice a. $\left(4x^2 + 1\right)(x + 3)$

21. To find one factor of the trinomial $3x^2 - 2x - 8$, find the master product, $(3)(-8) = -24$, then find the two factors whose product is $-24$ and sum $-2$: **- 6** and **4.** Rewrite original trinomial using the two factors **– 6** and **4** to split up the middle term.

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

Use grouping to finish factoring.

$$\left(3x^2 - 6x\right) + (4x - 8)$$

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

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

Choice d. $3x + 4$

22. To solve $4a^2 + 20a = 0$, factor the left side of the equation, use the Zero Factor Property (ZFP) to set each factor = 0 and solve for both values of *a*. Zero Factor Property (ZFP) means: If $a \cdot b = 0$, then $a = 0$ or $b = 0$.

Factor: $4a(a + 5) = 0$

Use ZFP: $4a = 0$ or $a + 5 = 0$

Solve for *a*: $\frac{4a}{4} = \frac{0}{4}$ or $a = 0 - 5$

$a = 0$ $a = -5$

Thus one solution is $a = -5$

Choice b. $a = -5$

23. To solve the equation $x^2 - 10x + 24 = 0$, use the three step process outlined below:

Factor: $(x - 4)(x - 6) = 0$

Use ZFP: $x - 4 = 0$ *or* $x - 6 = 0$

Solve for *x*: $x = 4$ *or* $x = 6$

Zero Factor Property (ZFP) means: If $a \cdot b = 0$, then $a = 0$ or $b = 0$.

Choice c. $x = 6$ *or* 4

24. To simplify $\frac{x^2 - 4x + 4}{x^2 - 5x + 6}$, use the process outlined below.

Factor numerator: $\frac{(x - 2)(x - 2)}{}$

Factor denominator: $(x - 3)(x - 2)$

Cancel common factor (*x* - 2) to get:

$$\frac{(x-2)\overset{1}{\cancel{(x-2)}}}{(x-3)\underset{1}{\cancel{(x-2)}}} = \frac{x-2}{x-3}$$

Choice d. $\frac{x - 2}{x - 3}$

25. To simplify $\sqrt{27a^8b^7}$, rewrite $\sqrt{27a^8b^7}$ as $\sqrt{9a^8b^6}\sqrt{3b}$, then take the square root of $\sqrt{9a^8b^6}$ to get $3a^4b^3$.

Then rewrite $\sqrt{27a^8b^7}$ as $3a^4b^3\sqrt{3b}$.

Choice a. $3a^4b^3\sqrt{3b}$.

26. To multiply $(\sqrt{6} - 4)(\sqrt{6} + 4)$, use the special product method to multiply and obtain the difference of squares.

$(\sqrt{6})^2 - 4^2 = 6 - 16 = -10$

Choice a. $-10$

27. To solve the system for *x*, use the elimination method.

$$\begin{aligned} x + y &= 8 \\ 2x - y &= 10 \end{aligned}$$

Add the two equations to eliminate the *y* variable and solve for *x*.

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

Now replace *x* with 6 in the first equation, $x + y = 8$, and solve for *y*.

$6 + y = 8$

$y = 8 - 6$

$y = 2$

Choice d. $y = 2$

28. To find the *x*-intercept for the graph $4x - 3y = -12$, replace *y* with 0 and solve for *x*.

Replace: $4x - 3(0) = -12$

Solve for *x*: $\frac{4x}{4} = \frac{-12}{4}$

$x = -3$

Choice b. $(-3, 0)$.

29. To find the slope, m, of a line, use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ with the points $(-4, -3)$ and $(0, -2)$

Slope: $m = \frac{-2 - (-3)}{0 - (-4)} = \frac{-2 + 3}{0 + 4} = \frac{1}{4}$

Choice d. $m = \frac{1}{4}$

30. To find the equation of the line passing through $(1, 3)$ and $(-2, 5)$, find the slope, *m*, and use the point-slope formula, $y - y_1 = m(x - x_1)$, to get the equation of the line.

Find slope: $m = \frac{5 - 3}{-2 - 1} = \frac{2}{-3} = -\frac{2}{3}$

Use $y - y_1 = m(x - x_1)$ with the slope and one point to get: $y - 3 = -\frac{2}{3}(x - 1)$

Clear fraction $3(y - 3) = 3\left[-\frac{2}{3}(x - 1)\right]$

Distribute $3(y - 3) = -2(x - 1)$

Move 2*x* and -9 $3y - 9 = -2x + 2$

Add numbers $2x + 3y = 2 + 9$

$2x + 3y = 11$

Choice b. $2x + 3y = 11$