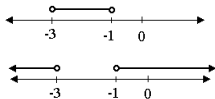
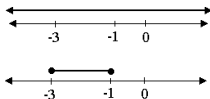


Practice Algebra Test

Instructions:

- Read each problem carefully. Then work the problem on a separate sheet of paper and click on the box next to the correct choice. If you change your mind, just click on a different choice.
- Use the navigational buttons at the bottom of each page to go to the next or previous page.
- A calculator is not required for any questions on this test.
- This practice test consists of 25 problems. Click on “Begin Quiz”, then begin.

1. Graph $\{x \mid x < -3 \text{ or } x > -1\}$



2. Simplify: $-3 + 5[6 - 4(-2 - 7)]$

-147

-36

63

207



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3. Subtract $\frac{3}{4}$ from the product of -9 and $\frac{5}{36}$.

$$-\frac{1}{2}$$

$$-2$$

$$-\frac{3}{4}$$

$$\frac{7}{4}$$

4. Company X 's shipping rate is \$.35 for each of the first 5 ounces, and \$.10 for each additional ounce. What would it cost to ship a 12 ounce package?

$$\$1.05$$

$$\$1.20$$

$$\$2.45$$

$$\$3.00$$

5. Solve $\frac{3}{2}(8x - 9) + \frac{5}{2} = 13$

$$-\frac{11}{6}$$

$$-1$$

$$\frac{5}{2}$$

$$2$$

6. $2^{-5} \cdot 64^{2/3} =$

$$512$$

$$\frac{1}{512}$$

$$1$$

$$\frac{1}{2}$$

7. Solve: $-7(2x - 3) \leq -5(3x - 4)$

$$x \leq -1$$

$$x \leq 2$$

$$x \leq -2$$

$$x \geq 1$$

8. Solve: $|2x - 5| - 1 > 2$

$$x > -1 \text{ or } x < 4$$

$$x > 1 \text{ or } x < 4$$

$$x > 4 \text{ or } x < 1$$

$$x > 4 \text{ or } x < -1$$



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9. Simplify, write answers with positive exponents: $\left(\frac{x^{-6}y^{-2}}{x^{-3}y^{-3}}\right)^{-1}$

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

$$\frac{y}{x^3}$$

$$\frac{1}{x^3y^5}$$

$$\frac{x^3}{y}$$

10. Simplify: $\left(\frac{7}{12}x^3 - \frac{2}{5}x^2 + \frac{8}{9}\right) - \left(\frac{7}{20}x^2 + \frac{1}{6}x - \frac{5}{18}\right)$

$$\frac{7}{12}x^3 - \frac{3}{4}x^2 + \frac{1}{6}x + \frac{11}{18}$$

$$\frac{7}{12}x^3 - \frac{1}{20}x^2 + \frac{1}{6}x + \frac{11}{18}$$

$$\frac{7}{12}x^3 - \frac{1}{20}x^2 - \frac{1}{6}x + \frac{7}{6}$$

$$\frac{7}{12}x^3 - \frac{3}{4}x^2 - \frac{1}{6}x + \frac{7}{6}$$

11. One of the factors of $10x^2 - x - 21$ is

$$2x + 3$$

$$5x + 7$$

$$5x + 3$$

$$10x - 1$$

12. What is the sum of the solutions of $x^3 - 4x = 0$?

$$0$$

$$-1$$

$$1$$

$$2$$



$$13. \frac{x^2 + 8x + 16}{x^2 - 3x - 28} = \frac{x - 4}{x + 4} \qquad \frac{x + 4}{x - 7} \qquad \frac{x + 8}{x - 3} \qquad \frac{x + 8}{x - 7}$$

$$14. \text{Solve: } \frac{10}{a - 8} = \frac{6}{a - 2}$$

4 $\frac{17}{4}$ -7 -2

$$15. \sqrt{64x} + 3\sqrt{x} =$$

$\sqrt{73x}$ $4\sqrt{65x}$ $11\sqrt{x}$ $\sqrt{67x}$

$$16. \frac{4x}{x^2 - 49} - \frac{2}{x + 7} =$$

$\frac{2}{x - 7}$ $\frac{4x - 2}{x^2 - 49}$ $\frac{1}{x + 7}$ $\frac{1}{x - 7}$

17. A student has 75 coins worth a total of \$10.65. Each coin is either a dime (10 cents) or a quarter (25 cents). If x is the number of dimes, then x can be determined from the equation

$$0.10x + 0.25(75 - x) = 10.65 \qquad \frac{x}{0.10} + \frac{75 - x}{0.25} = 10.65$$

$$75x = 10.65$$

$$0.10 + 0.25(75 - x) = 10.65$$


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- 18.** What is the area, in square centimeters, of a rectangle with perimeter of 56 cm if the length is 4 cm less than three times the width?

76

104

132

160

19. $(-x^2y^{-3})(-2x^2y^4)^3 =$

$-2x^8y^9$

$8x^7y^4$

$8x^8y^9$

$8x^7y^{10}$

- 20.** The slope of the line that goes through the points $(-5, 4)$ and $(3, -12)$ is

$-\frac{1}{2}$

8

-2

4

- 21.** Solve the equation $3x - 2 = 2\left(\frac{1}{2} - \frac{1}{3}x\right)$

$x = -\frac{1}{11}$

$x = \frac{1}{9}$

$x = \frac{9}{11}$

$x = \frac{9}{7}$

- 22.** Find all solutions to the equation $3x^2 = 4x + 1$

$4/3, 1/3$

$\frac{2+\sqrt{7}}{3}, \frac{2-\sqrt{7}}{3}$

$\frac{4+3\sqrt{2}}{6}, \frac{4-3\sqrt{2}}{6}$

$\frac{2+\sqrt{2}}{3}, \frac{2-\sqrt{2}}{3}$

- 23.** In the system of equations $\begin{cases} 2x - 3y = 3 \\ 4x + 2y = 2 \end{cases}$

$y = -1/2$

$y = -1$

$y = -1/4$

$y = 0$



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24. If $4x = 1 + \sqrt{2x + 1}$ then $x =$

$\frac{3}{2}$

$\frac{3}{4}$

$\frac{5}{8}$

$\frac{5}{16}$

25. The sum of the x and y intercepts of the line that passes through the two points $(-2, 5)$ and $(8, 10)$ is

12

-6

6

0

- Click on “End Quiz” to have the computer grade your test. Then click on “Correct My Answers” to see which questions you got wrong.
- Click on the green dots to see detailed solutions for each problem.



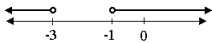
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Solutions to Practice Algebra Test

Solution to Question 1: The solution is



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Solution to Question 2: $-3 + 5[6 - 4(-2 - 7)] = -3 + 5[6 - 4(-9)] =$
 $-3 + 5[6 + 36] = -3 + 5(42) = -3 + 210 = 207$ [Return](#)



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Solution to Question 3: $(-9) \cdot \left(\frac{5}{36}\right) = -\frac{5}{4}$, so $-\frac{5}{4} - \frac{3}{4} = -\frac{8}{4} = -2$.

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Solution to Question 4: The first 5 ounces cost $(.35)(5) = 1.75$. The next $12 - 5 = 7$ ounces cost $(.10)(7) = 0.70$, so the total cost is $1.75 + 0.70 = \$2.45$.

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Solution to Question 5: Multiplying both sides of the equation $\frac{3}{2}(8x - 9) + \frac{5}{2} = 13$ by 2 we obtain

$$\begin{aligned}3(8x - 9) + 5 &= 26 \Rightarrow 24x - 27 + 5 = 26 \\ \Rightarrow 24x - 22 &= 26 \\ \Rightarrow 24x &= 48 \\ \Rightarrow x &= 2\end{aligned}$$

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Solution to Question 6: $2^{-5} = \frac{1}{2^5} = \frac{1}{32}$ and $64^{2/3} = (\sqrt[3]{64})^2 = (4)^2 = 16$, so $2^{-5} \cdot 64^{2/3} = \frac{1}{32} \cdot 16 = \frac{16}{32} = \frac{1}{2}$.

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Solution to Question 7:

$$\begin{aligned}-7(2x - 3) &\leq -5(3x - 4) \\ \Rightarrow -14x + 21 &\leq -15x + 20 \\ \Rightarrow x &\leq -1\end{aligned}$$

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Solution to Question 8:

$$|2x - 5| - 1 > 2$$

$$\Rightarrow |2x - 5| > 3$$

$$\Rightarrow 2x - 5 > 3 \text{ or } 2x - 5 < -3$$

$$\Rightarrow 2x > 8 \text{ or } 2x < 2$$

$$\Rightarrow x > 4 \text{ or } x < 1$$

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Solution to Question 9: $\frac{x^{-6}y^{-2}}{x^{-3}y^{-3}} = \frac{x^3y^3}{x^6y^2} = \frac{y}{x^3}$ so $\left(\frac{x^{-6}y^{-2}}{x^{-3}y^{-3}}\right)^{-1} = \frac{x^3}{y}$.

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Solution to Question 10:

$$\begin{aligned}\left(\frac{7}{12}x^3 - \frac{2}{5}x^2 + \frac{8}{9}\right) &- \left(\frac{7}{20}x^2 + \frac{1}{6}x - \frac{5}{18}\right) \\&= \frac{7}{12}x^3 + \left(-\frac{2}{5} - \frac{7}{20}\right)x^2 - \frac{1}{6}x + \left(\frac{8}{9} + \frac{5}{18}\right) \\&= \frac{7}{12}x^3 + \left(-\frac{8}{20} - \frac{7}{20}\right)x^2 - \frac{1}{6}x + \left(\frac{16}{18} + \frac{5}{18}\right) \\&= \frac{7}{12}x^3 + \left(-\frac{15}{20}\right)x^2 - \frac{1}{6}x + \frac{21}{18} \\&= \frac{7}{12}x^3 - \frac{3}{4}x^2 - \frac{1}{6}x + \frac{7}{6}\end{aligned}$$

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Solution to Question 11: $10x^2 - x - 21 = (2x - 3)(5x + 7)$

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Solution to Question 12: $x^3 - 4x = x(x^2 - 4) = x(x - 2)(x + 2)$ so the solutions are $x = 0, 2, -2$ and so the sum is 0.

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Solution to Question 13:

$$\frac{x^2 + 8x + 16}{x^2 - 3x - 28} = \frac{(x + 4)(x + 4)}{(x - 7)(x + 4)} = \frac{x + 4}{x - 7}$$

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Solution to Question 14: Cross-multiplying we have

$$\begin{aligned}10(a - 2) &= 6(a - 8) \\ \Rightarrow 10a - 20 &= 6a - 48 \\ \Rightarrow 4a &= -28 \Rightarrow 4a = -28 \\ \Rightarrow a &= -7\end{aligned}$$

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Solution to Question 15:

$$\sqrt{64x} + 3\sqrt{x} = 8\sqrt{x} + 3\sqrt{x} = 11\sqrt{x}$$

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Solution to Question 16: A common denominator is $x^2 - 49$. Then

$$\frac{2}{x+7} = \frac{2}{x+7} \cdot \frac{x-7}{x-7} = \frac{2(x-7)}{x^2-49} = \frac{2x-14}{x^2-49}. \text{ So}$$

$$\begin{aligned} \frac{4x}{x^2-49} - \frac{2}{x+7} &= \frac{4x}{x^2-49} - \frac{2x-14}{x^2-49} \\ &= \frac{4x - (2x-14)}{x^2-49} \\ &= \frac{4x - 2x + 14}{x^2-49} \\ &= \frac{2x + 14}{x^2-49} \\ &= \frac{2(x+7)}{(x+7)(x-7)} \\ &= \frac{2}{x-7} \end{aligned}$$

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Solution to Question 17: If x is the number of dimes, that $.10x$ is their worth. Since there are 75 coins altogether, the number of quarters must be $75 - x$ and their worth is $.25(75 - x)$. Hence the total worth of the coins is $.10x + .25(75 - x)$ and this must equal 10.65. [Return](#)



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Solution to Question 18: Let l and w be the length and width of the rectangle. Then $l = 3w - 4$ and $2l + 2w = 56$. So $l + w = 28$ and so $3w - 4 = l = 28 - w \Rightarrow 4w = 32 \Rightarrow w = 8$ and so $l = 20$. So the area of the rectangle is $l \cdot w = (20)(8) = 160$ square centimeters. [Return](#)



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Solution to Question 19: $(-x^2y^{-3})(-2x^2y^4)^3 = (-x^2y^{-3})(-8x^6y^{12}) = 8x^8y^9$.

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Solution to Question 20: The slope is

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-12 - 4}{3 - (-5)} = \frac{-16}{8} = -2$$

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Solution to Question 21: Multiplying both sides of the equation by 6 we have $18x - 12 = 2(3 - 2x) = 6 - 4x \Rightarrow 22x = 18 \Rightarrow x = \frac{18}{22} = \frac{9}{11}$. [Return](#)

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Solution to Question 22: We use the quadratic formula to solve the equation $3x^2 - 4x - 1 = 0$ with $a = 3$, $b = -4$, and $c = -1$. So

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{4 \pm \sqrt{16 + 12}}{6} = \frac{4 \pm \sqrt{28}}{6} = \frac{4 \pm 2\sqrt{7}}{6} = \frac{2 \pm \sqrt{7}}{3}$$

So the solutions are $\frac{2+\sqrt{7}}{3}$ and $\frac{2-\sqrt{7}}{3}$.

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Solution to Question 23: If we multiply the first equation by -2 we obtain $-4x + 6y = -6$. Then adding this equation to the second equation $4x + 2y = 2$ we obtain $8y = -4$ or $y = -\frac{1}{2}$. [Return](#)



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Solution to Question 24: If we square both sides of the equation $4x - 1 = \sqrt{2x + 1}$ we find that $16x^2 - 8x + 1 = 2x + 1 \Rightarrow 16x^2 - 10x = 0 = 2x(8x - 5) \Rightarrow x = 0$ or $x = \frac{5}{8}$. We see that $x = 0$ is not a solution since $0 \neq 2$, so the only solution is $x = \frac{5}{8}$. [Return](#)



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Solution to Question 25: The slope of this line is $\frac{10-5}{8+2} = \frac{5}{10} = \frac{1}{2}$. The equation of the line then is $y = \frac{1}{2}x + b$. If we plug in one of the points, say $x = -2$ and $y = 5$, we have $5 = \frac{1}{2}(-2) + b = -1 + b \Rightarrow b = 6$. So the equation of this line is $y = \frac{1}{2}x + 6$. If $x = 0$ then $y = 6$ (the y intercept). If $y = 0$ then $0 = \frac{1}{2}x + 6 \Rightarrow -6 = \frac{1}{2}x \Rightarrow x = -12$ (the x intercept). Hence the sum of the two intercepts is $6 - 12 = -6$. Return