# SKILLS ASSESSMENT FOR MAT1033 INTERMEDIATE ALGEBRA

**Do you have the algebra and arithmetic skills for Intermediate Algebra? The skills needed to solve the problems on this assessment are skills required for Intermediate Algebra. To increase your chance of success, we encourage you to take this assessment and score it. If you score below 70%, we strongly recommend that you enroll in Developmental Math 2 or brush up on your algebra skills before the start of the term.**

**Simplify each expression.**

1) $-4[8 - 2(4 - 7)]$

2) $\dfrac{-6 - 3(-4)^2}{-9 - 3(-5)}$

3) $\left|-17 + 9\right| - \left|11 + (-23)\right|$

4) **Simplify.** $6(8x - 3) - 9(4 - x)$

**Solve each equation.**

5) $11 - 3(x + 6) = 15 - 7(x + 2)$

6) $0.50x - 0.20(40 + x) = -0.05(40)$

7) $\dfrac{1}{3}x + 2 = \dfrac{5}{6}x + \dfrac{3}{2}$

8) **Solve the formula for the indicated variable.**

$P = 2a + 2b$ for $b$

9) **Find the proportion that solves this problem.**

A drug label recommends 0.8 mg of a certain antibiotic per 2 mL of solution. At this rate, how many milligrams of antibiotic should be added to 4.8 mL of solution?

A) $\dfrac{x}{2} = \dfrac{0.8}{4.8}$     C) $\dfrac{0.8}{x} = \dfrac{4.8}{2}$

B) $\dfrac{2}{x} = \dfrac{0.8}{4.8}$     D) $\dfrac{0.8}{2} = \dfrac{x}{4.8}$

10) **Translate into an algebraic equation.**

The sum of twice a number and 5 is 10 less than three times the number.

**Solve the problem.**

11) A 40-foot board is cut into two pieces so that the second piece is 4 feet longer than 5 times the first piece. Find the length of each piece.

12) Find the original price of a television if the sale price is $171.50 after a 30% discount.

13) **Solve the inequality.** $-9p + 2(8 - p) \geq 4p - 14$

**Simplify each expression.**

14) $(-2x^2 y^{-4} z)^3$

15) $\left(\dfrac{a^4 b^{-2}}{a^{-3} b}\right)^{-3}$

16) **Express in scientific notation.** 8,340,000

17) **Evaluate the given polynomial when y = −2.**

$3y^2 + 8y - 9$

18) **Subtract.** $(5x^2 - 6x - 7) - (-2x^2 - 4x + 8)$

**Find each product.**

19) $(6p - 5)(2p + 3)$

20) $(4x - 7y)^2$

21) **Divide:** $\dfrac{9x^4 y^4 + 6x^6 y^8 - 12x^7 y^5}{3x^4 y^4}$

**Factor each polynomial completely.**

22) $16x^2 - 25y^2$

23) $15x^2 - 26x + 8$

24) **Factor by grouping.** $6x^2 + 10xy - 3xy - 5y^2$

25) **Solve.** $x^2 + 2x - 24 = 0$

26) **Simplify.** $\dfrac{x^2 - x - 20}{x - 5}$

27) **Graph the equation.** $y = -2x + 3$

28) **Find the *x*- and *y*-intercepts of the line:**
$$-3x - 6y = 12$$

29) Find the slope of the line passing through the points $(-1, 4)$ and $(2, -5)$.

30) **Simplify the radical.** $\sqrt{72x^3 y^6}$

**Perform the indicated operations.**
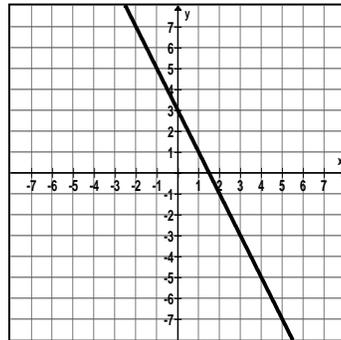
31) $3\sqrt{32} - \sqrt{18}$

32) $\sqrt{10}\left(\sqrt{5} - \sqrt{2}\right)$

33) $\sqrt{\dfrac{24x^3}{6x}}$

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<u>**ANSWER KEY**</u>

1) $-56$

2) $-9$

3) $-4$

4) $57x - 54$

5) $2$

6) $20$

7) $1$

8) $b = \dfrac{P - 2a}{2}$

9) D

10) $2x + 5 = 3x - 10$

11) 6 ft. and 34 ft.

12) $245

13) $p \le 2$

14) $-\dfrac{8x^6 z^3}{y^{12}}$

15) $\dfrac{b^9}{a^{21}}$

16) $8.34 \times 10^6$

17) $-13$

18) $7x^2 - 2x - 15$

19) $12p^2 + 8p - 15$

20) $16x^2 - 56xy + 49y^2$

21) $3 + 2x^2 y^4 - 4x^3 y$

22) $(4x + 5y)(4x - 5y)$

23) $(3x - 4)(5x - 2)$

24) $(3x + 5y)(2x - y)$

25) $x = -6$, or $x = 4$

26) $x + 4$

27)



28) *x*-intercept: $(-4, 0)$; *y*-intercept: $(0, -2)$

29) $-3$

30) $6xy^3 \sqrt{2x}$

31) $9\sqrt{2}$

32) $5\sqrt{2} - 2\sqrt{5}$

33) $2x$