

DO YOU HAVE THE SKILLS FOR INTERMEDIATE ALGEBRA?

SKILLS ASSESSMENT

Simplify each expression.

1) $-8 + (5 \cdot 3 - 20)^2 \div 5$

2) $\frac{-2 \cdot 2^3 + 128 \div 4^2}{(-2)^3}$

- A) -1 B) undefined
C) 0 D) 1

3) $|-17 + 9| - |11 + (-23)|$

- A) 4 B) -20
C) 20 D) -4

Perform the indicated operations.

4) $-1\frac{5}{9} - \left(-2\frac{1}{3}\right)$

- A) $1\frac{2}{9}$ B) $\frac{7}{9}$
C) $-3\frac{5}{9}$ D) $3\frac{5}{9}$

5) $\frac{1}{2} \div \left(-\frac{3}{4}\right)$

Multiply and simplify.

6) $2x - 3[x - 2(4 - x)]$

- A) $x - 8$ B) $-7x + 24$
C) $5x - 24$ D) $2x + 24$

Solve for b.

7) $-2.45 = \frac{b}{9}$

- A) -22.05 B) 6.55
C) -4.00 D) 5.55

Solve each equation.

8) $11 - 3(x + 6) = 15 - 7(x + 2)$

9) $0.50x - 0.20(40 + x) = -0.05(40)$

10) $\frac{1}{3}r + 2 = \frac{1}{6}r + \frac{4}{3}$

- A) 3 B) 4
C) -12 D) -4

Solve the formula for the specified variable.

11) $A = \frac{1}{2}(B + b)$ for B

Identify the proportion that solves this problem.

12) 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) $\frac{0.8}{2} = \frac{x}{4.8}$ B) $\frac{0.8}{x} = \frac{4.8}{2}$
C) $\frac{2}{x} = \frac{0.8}{4.8}$ D) $\frac{x}{2} = \frac{0.8}{4.8}$

Translate into an algebraic equation.

13) The sum of twice a number and 5 is 10.

- A) $2(x + 5) = 10$ B) $2x + 5 = 10$.
C) $5x + 2 = 10$ D) $x^2 + 5 = 10$

Solve the problem.

14) 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.

15) **Write percent notation:** 0.375.

16) What number is 39% of 1439?

- A) 561.21 B) 56.121
C) 56.12 D) 5612.1

Use the information in the problem below to answer questions 17 – 20.

At the start of the term, a college algebra class has 36 students. The number of female students is 6 less than twice the number of male students.

17) Which equation can be used to find the number of male students in the class?

- A) $6 - 2x = 36$ B) $x + 2(x - 6) = 36$
C) $x + 2x - 6 = 36$ D) $2(x - 6) = 36$

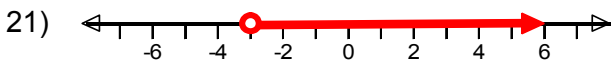
18) How many students are males? How many are females?

- A) 15 males and 21 females
B) 16 males and 20 females
C) 14 males and 22 females
D) 24 males and 12 females

19) What is the ratio of males to females in this class? Write this ratio as a percent, rounded to the nearest tenth of a percent.

20) By the end of the term, 24 students attended the class. Find the percent decrease.

Use the graph below to write an inequality.



- A) $y \leq -3$ B) $y \geq -3$
C) $y < -3$ D) $y > -3$

Solve each inequality.

22) $-9p + 2(8 - p) \geq 4p - 14$

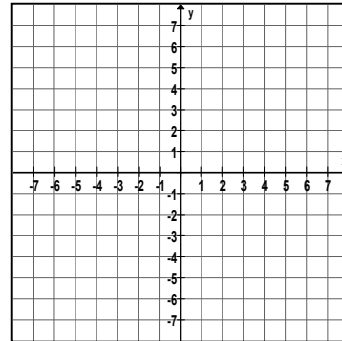
23) $\frac{7}{15}(y + 1) > \frac{2}{5}(y + 8)$

- A) $\{y \mid y < -41\}$ B) $\{y \mid y > 41\}$
C) $\{y \mid y > -41\}$ D) $\{y \mid y < 41\}$

24) The ordered pair (4, -5) lies in which quadrant of the rectangular coordinate system?

- A) Quadrant II B) Quadrant I
C) Quadrant III D) Quadrant IV

25) **Graph the equation:** $y = -2x + 3$



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

27) If $4x = 2y + 8$, find y.

- A) $y = 2x - 4$ B) $y = 2x + 4$
C) $y = 4x - 8$ D) $y = -2x + 4$

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

- A) $m = -3$ B) $m = 1/3$
C) $m = -1/3$ D) $m = -3$

29) **Evaluate:** $\left(-\frac{3}{4}\right)^{-3}$

Simplify each expression.

30) $-4(x^2y^{-3}z^0)^2$

A) $-\frac{16x^4}{y^6}$ B) $-\frac{4x^4}{y^6}$

C) $-\frac{4x^4z^2}{y^5}$ D) $\frac{16x^4}{y^6}$

31) $-2^0 + 3^{-1}$

32) $\left(\frac{-6a^{-5}b}{12ab^{-4}}\right)^3$

33) Write in scientific notation: 17.692

- A) 1.7692×10^{-1} B) 1.7692×10^1
C) 1.7692×10^2 D) 1.7692×10^{-2}

34) Evaluate $-16t^2 - 48t + 300$ for $t = 3$.

35) Subtract $(3x^2 - 30)$ from the sum of $(-2x^2 + 2)$ and $(9x^2 - 8)$.

- A) $4x^2 + 24$ B) $8x^2 + 40$
C) $10x^2 - 36$ D) $-4x^2 - 24$

Find each product.

36) $(6p - 5)(2p + 3)$

37) $(5x - 9y)(5x + 9y)$

- A) $25x^2 - 28xy + 81y^2$
B) $25x^2 - 81y^2$
C) $25x^2 - 90xy + 81y^2$
D) $25x^2 + 81y^2$

38) $(4x - 7y)^2$

- A) $16x^2 + 56xy + 49y^2$
B) $16x^2 + 49y^2$
C) $16x^2 - 49y^2$
D) $16x^2 - 56xy + 49y^2$

Divide:

39) $(9x^4y^4 + 6x^6y^8 - 12x^7y^5) \div (3x^4y^4)$

Factor each polynomial completely.

40) $2x^4 - 50x^2$

41) $15x^2 - 22x + 8$

- A) $(3x + 2)(5x + 4)$
B) $(15x - 1)(x - 8)$
C) $(3x - 2)(5x - 4)$
D) $(15x + 2)(x + 4)$

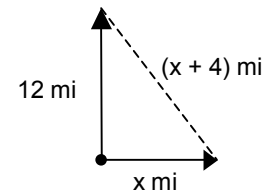
42) $6x^2 + 10xy - 3xy - 5y^2$

- A) $(2x - y)(3x - 5y)$
B) $(2x + y)(3x - 5y)$
C) $(2x - y)(3x + 5y)$
D) Prime

43) Solve: $x^2 + 13x = 30$

- A) $-3, 10$ B) $15, -2$
C) $3, -10$ D) $-15, 2$

44) Two cars leave an intersection. One car travels north; the other east, as shown. When the car traveling north had gone 12 miles, the distance between the cars was 4 miles more than the distance traveled by the car heading east. How far had the eastbound car traveled?



45) Simplify: $\frac{y^2 - 5y - 14}{y^2 + 11y + 18}$

- A) Prime B) $\frac{y - 7}{y + 9}$
C) $\frac{-5y - 14}{11y + 18}$ D) $\frac{-5y - 7}{11y + 9}$

46) Find the square root: $\sqrt{72x^6y^3}$

Perform the indicated operations.

47) $x\sqrt{75} - \sqrt{27x^2}$

48) $\sqrt{7x^2y}\sqrt{21x^7y^4}$

- A) $7x^4y^2\sqrt{3xy}$ B) $7x^8y^4\sqrt{3xy}$
C) $x^4y^2\sqrt{63xy}$ D) $3xy\sqrt{7x^8y^4}$

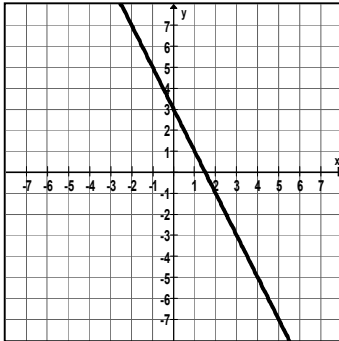
49) $\frac{\sqrt{63x^4y}}{\sqrt{7xy}}$

50) Solve: $6m^2 + 10m + 2 = 0$

- A) $\frac{-10 \pm \sqrt{13}}{6}$ B) $\frac{-5 \pm \sqrt{13}}{6}$
C) $\frac{-5 \pm \sqrt{13}}{12}$ D) $\frac{-5 \pm \sqrt{37}}{6}$

Answer Key

- 1) -3
- 2) D
- 3) D
- 4) B
- 5) $-\frac{2}{3}$
- 6) B
- 7) A
- 8) 2
- 9) 20
- 10) -4
- 11) $B = 2A - b$
- 12) A
- 13) B
- 14) 6 feet and 34 feet
- 15) 37.5%
- 16) A
- 17) C
- 18) C
- 19) 63.6%
- 20) 33.3%
- 21) D
- 22) $p \leq 2$
- 23) B
- 24) D
- 25)



- 26) (-4, 0) and (0, -2)
- 27) A
- 28) A
- 29) $-\frac{64}{27}$
- 30) $-\frac{4x^4}{y^6}$
- 31) $-\frac{2}{3}$
- 32) $-\frac{b^{15}}{8a^{18}}$
- 33) B
- 34) 12
- 35) A
- 36) $12p^2 + 80p - 15$
- 37) B
- 38) D
- 39) $3 + 2x^2y^4 - 4x^3y$
- 40) $2x^2(x + 5)(x - 5)$
- 41) C
- 42) C
- 43) D
- 44) 16 mi
- 45) B
- 46) $6x^3y\sqrt{2y}$
- 47) $2x\sqrt{3}$
- 48) $7x^4y^2\sqrt{3xy}$
- 49) 3x
- 50) B