The Learning Centre
Basic Algebra Proﬁciency Practice Test

This practice test contains 13 questions. The actual test contains 25 questions. The use of a calculator is not permitted.

Topics for this test include: factoring, rational expressions, inequalities, systems of equations, word problems, exponents, radicals, ratios and proportions, graphs of linear functions.

---

1. $\dfrac{2x}{x^2-25} - \dfrac{1}{x+5} =$

   A. $\dfrac{2x-1}{x^2-25}$
   B. $\dfrac{1}{x+5}$
   C. $\dfrac{1}{x-5}$
   D. $x+5$
   E. $\dfrac{2x-1}{x^2-x-20}$

2. $\dfrac{a}{a+\dfrac{3}{b}} =$

   A. $\dfrac{b}{b+3}$
   B. $\dfrac{b+3}{b}$
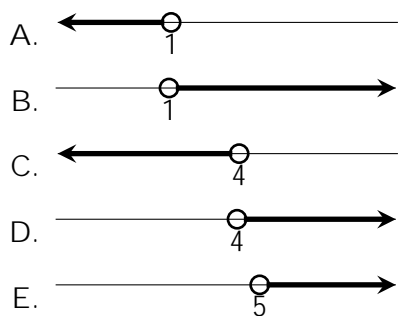   C. $\dfrac{b}{3}$
   D. $\dfrac{ab}{ab+3}$
   E. $\dfrac{ab}{a+3}$

3. $\dfrac{\sqrt{10}}{\sqrt{15x}} =$

   A. $\dfrac{\sqrt{6x}}{3x}$
   B. $\dfrac{2\sqrt{3x}}{3x}$
   C. $\dfrac{2\sqrt{15x}}{3x}$
   D. $\dfrac{\sqrt{3x}}{2}$
   E. $\dfrac{\sqrt{15x}}{10}$

4. $\sqrt{9x} + 5\sqrt{x} =$

   A. $\sqrt{14x}$
   B. $5\sqrt{10x}$
   C. $\sqrt{34x}$
   D. $8\sqrt{x}$
   E. $6\sqrt{10x}$

5. Of the following graphs, which best represents the solution of the inequality $2x + 3 < 5$?

   A. (arrow left, open circle at 1)
   B. (arrow right, open circle at 1)
   C. (arrow left, open circle at 4)
   D. (arrow right, open circle at 4)
   E. (arrow right, open circle at 5)

6. If $\dfrac{1}{x} + 5 = \dfrac{x-4}{x}$, then $x =$

   A. 10
   B. $\dfrac{1}{8}$
   C. $\dfrac{1}{2}$
   D. $\dfrac{3}{4}$
   E. $\dfrac{5}{4}$

7. The $x-$coordinate of the solution to the system of equations $\begin{cases} 4x + 3y = 9 \\ 4x - 3y = 7 \end{cases}$ is:

   A. $x = 16$
   B. $x = 4$
   C. $x = 2$
   D. $x = \dfrac{1}{3}$
   E. $x = \dfrac{1}{4}$

---

8. $\dfrac{x^2 - 16}{x^2 - 8x + 16} =$

    A. $\dfrac{x + 4}{x - 4}$ B. 0 C. $\dfrac{1}{8x}$ D. 1 E. $\dfrac{16}{8x + 16}$

9. A student has 42 coins worth a total of $5.90. Each coin is either a nickel (five cents) or a quarter (twenty-five cents). If x is the number of nickels, then x can be determined from the equation

    A. $0.05x + 0.25(42 - x) = 5.90$

    B. $0.05 + 0.25(42 - x) = 5.90$

    C. $0.05x + 10.50 = 5.90$

    D. $42x = 5.90$

    E. $\dfrac{x}{0.05} + \dfrac{42 - x}{0.25} = 5.90$

10. One of the factors of $14x^2 + x - 3$ is

    A. $7x - 3$ B. $14x - 1$ C. $2x - 1$ D. $7x + 3$ E. $7x + 1$

11. $\sqrt{80a^8 b^{12}}$

    A. $4a^4 b^6$ B. $40a^4 b^6$ C. $4a^6 b^{10}\sqrt{5}$ D. $4a^4 b^6\sqrt{5}$ E. $40a^8 b^{12}$

12. In a certain company, 240 of the employees are men. What is the total number of employees if 5 out of every 8 employees are men?

    A. 9600   B. 1920   C. 384   D. 150   E. 16

13. Which of the following points lies on the line $3x + 4y + 5 = 0$?

    A. $\left(4; \dfrac{11}{3}\right)$ B. $\left(-4; \dfrac{7}{4}\right)$ C. $\left(0; \dfrac{5}{4}\right)$ D. $(4; -7)$ E. $\left(4; -\dfrac{17}{4}\right)$

Answers:

1. C	2. D	3. C	4. D	5. A	6. E
7. C	8. A	9. A	10. A	11. D	12. C
13. B					