



Instructions: This placement test is designed to assist Unity College in placing you in the math class that is most appropriate to your ability and math background. Therefore, it is in your best interest to do the best you can, but DO NOT GUESS if you do not know how to solve a problem. In that situation, you should choose “e. Don’t know.” This will give us a more accurate picture of your ability and will allow us to enroll you in a math class where you will be successful. The use of a calculator is acceptable.

1. $2x - 3[2x - (3 - 4x)] =$

- a. $8x - 9$
- b. $-8x - 3$
- c. $-16x + 9$
- d. $12x^2 - 24x + 9$
- e. Don't know

2. $\frac{x^2-2x}{x^2-4} \cdot \frac{(x+2)^2}{x^2} =$

- a. $\frac{x+2}{x}$
- b. $\frac{x-4}{x}$
- c. $4x$
- d. $\frac{-2x(x+2)^2}{x^2-4}$
- e. Don't know

3. $\frac{x^6y^2}{x^{-2}y^4} =$

- a. $\frac{x^8}{y^2}$
- b. x^8y^6
- c. $(xy)^4$
- d. $\frac{y^8}{x^{12}}$
- e. Don't know

4. $\sqrt[3]{4} \cdot \sqrt[3]{12} =$

- a. $4\sqrt[3]{3}$
- b. $2\sqrt[3]{6}$
- c. $\sqrt[6]{48}$
- d. $2\sqrt[3]{2}$
- e. Don't know

5. If $2x + y = 8$ and $x - y = 1$, then $y =$
- 3
 - 5
 - 2
 - There are no solutions for y .
 - Don't know
6. The solutions to $x^2 + 2x - 3 = 0$ are
- 3 and -1
 - -3 and 1
 - $\frac{-1 \pm \sqrt{13}}{2}$
 - $-2 \pm i\sqrt{2}$
 - Don't know
7. If $f(x) = \frac{x^2+5}{x-1}$, then $f(-3) =$
- $-\frac{7}{2}$
 - 1
 - -7
 - $\frac{14}{3}$
 - Don't know
8. If $\frac{2}{3}$ is $\frac{1}{2}$ of $\frac{4}{5}$ of a certain number, then that number is
- $\frac{15}{4}$
 - $\frac{5}{3}$
 - $\frac{5}{6}$
 - $\frac{5}{12}$
 - Don't know
9. What is the slope and y -intercept of the line that is the graph of $2x - 3y = 6$?
- Slope = $\frac{3}{2}$, y -intercept = -3
 - Slope = $\frac{2}{3}$, y -intercept = -2
 - Slope = $\frac{3}{2}$, y -intercept = 3
 - Slope = $-\frac{2}{3}$, y -intercept = 2
 - Don't know

10. $\frac{3x-2}{x+2} - \frac{2}{x-2} =$

- a. $\frac{3}{x+2}$
- b. $\frac{3x-4}{x^2-4}$
- c. $\frac{3x}{x^2-4}$
- d. $\frac{x(3x-10)}{x^2-4}$
- e. Don't know

11. $x^{3a+2} \cdot x^{a-1} =$

- a. x^{4a-1}
- b. x^{3a^2-a-2}
- c. x^{4a+1}
- d. x^{3a^2-2}
- e. Don't know.

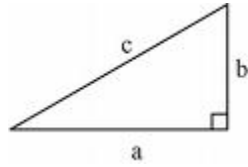
12. If $f(x) = 2x + 5$ and $g(x) = 1 - x^2$, then $f(g(x)) =$

- a. $-2x^3 - 5x^2 - 2x + 5$
- b. $4x^2 - 20x + 25$
- c. $-2x^2 + 7$
- d. $-4x^2 + 24$
- e. Don't know

13. If $7 - 2x < 1$, then

- a. $x < 3$
- b. $x < -4$
- c. $x > 3$
- d. $x > -4$
- e. Don't know

14. In the triangle given, if $c = 5x$ and $b = 3x$, then $a =$



- a. $2x$
 - b. $\sqrt{34x}$
 - c. $16x^2$
 - d. $4x$
 - e. Don't know
15. Find the zeros of the quadratic function $f(x) = 2x^2 + x - 6$.
- a. $3/2, -2$
 - b. $1/2, -6$
 - c. $-3/2, 2$
 - d. $-1/2, 6$
 - e. Don't know
16. An isosceles triangle has two sides with length 10. If the measures of the base angles are 50° each, find the third side.
- a. 7.8
 - b. 12.9
 - c. 10
 - d. 14.1
 - e. Don't know
17. Which expression is equivalent to $e^x = 10$?
- a. $\ln 10 = e$
 - b. $\ln x = 10$
 - c. $\ln 10 = x$
 - d. $\ln e = x$
 - e. Don't know
18. Which statement is equivalent to $\log\left(\frac{x^2y}{z}\right)$?
- a. $\frac{\log(x^2y)}{\log z}$
 - b. $2 \log x + \log y - \log z$
 - c. $\frac{(2\log x)(\log y)}{\log z}$
 - d. $2 \log(xy) - \log z$
 - e. Don't know

19. The parabola whose equation is $y = (x + 5)^2 - 2$ has its vertex at what point?
- (5, -2)
 - (0, 23)
 - (-5, -2)
 - (-5, 2)
 - Don't know
20. If $f(x) = 5x - 7$ and $g(x) = x^2$, find $f(g(2))$.
- 13
 - 9
 - 12
 - 7
 - Don't know
21. If $f(x) = 3x + 5$, find the inverse function $f^{-1}(x)$.
- $f^{-1}(x) = \frac{x}{3} - 5$
 - $f^{-1}(x) = 3x - 5$
 - $f^{-1}(x) = \frac{x-5}{3}$
 - $f^{-1}(x) = 3(x-5)$
 - Don't know
22. A 10 ft ladder leans against a house. The base of the ladder is 6 ft. from the house. What angle does the ladder make with the ground? (Round your answer to the nearest degree.)
- 37°
 - 53°
 - 31°
 - 60°
 - Don't know
23. In what quadrant of the unit circle does the angle $\frac{8\pi}{3}$ lie?
- I
 - II
 - III
 - IV
 - Don't know

24. Express $\frac{4\pi}{3}$ radians in degrees.

- a. 210°
- b. 240°
- c. 120°
- d. 60°
- e. Don't know

25. If $\log_2 x = 4$. Find x.

- a. 2
- b. 16
- c. 8
- d. $1/2$
- e. Don't know

26. What is the domain of $f(x) = \frac{2x}{3x-6}$.

- a. $x \neq 0$
- b. all real numbers
- c. $x \neq 2$
- d. $x \neq -2$
- e. Don't know

27. The value of the tangent function is positive in what quadrants?

- a. I and II
- b. I and III
- c. II and IV
- d. I and IV
- e. Don't know

28. What is the period of the function $f(x) = \sin 2x$?

- a. π
- b. 2π
- c. $\pi/2$
- d. 4π
- e. Don't know

29. The coordinates of the point at $\frac{5\pi}{6}$ on the unit circle are

a. $(\frac{1}{2}, \frac{-\sqrt{3}}{2})$

b. $(\frac{-\sqrt{3}}{2}, \frac{1}{2})$

c. $(\frac{\sqrt{3}}{2}, \frac{-1}{2})$

d. $(\frac{-1}{2}, \frac{\sqrt{3}}{2})$

e. Don't know

30. Solve for x: $\log_x 9 = 2$.

a. $2/9$

b. 81

c. 3

d. $\sqrt{2}$

e. Don't know