

Portland State University – MTH 95/111 Placement Test

Calculators and outside resources are not allowed. Select the “I don’t know” option any time you are unsure how to begin a problem – you should not guess the answer. Not following these procedures can lead to inaccurate results and misplacement.

- 1) The relationship between Celsius and Fahrenheit is linear and $0\text{ }^{\circ}\text{C} = 32\text{ }^{\circ}\text{F}$ and $100\text{ }^{\circ}\text{C} = 212\text{ }^{\circ}\text{F}$. Find an equation that converts Celsius to Fahrenheit.

- a. $F = C + 32$ **b.** $F = 1.8 C + 32$ c. $C = 1.8 F + 32$
d. $F = C + 112$ e. $F = 1.8 C$ f. I don’t know

- 2) Solve for x in the inequality $1 < 3x + 4 < 16$.

- a. $x > -7$ b. $x < 7$ c. $-4 < x < 1$
d. $\frac{13}{3} < x < \frac{28}{3}$ **e.** $-1 < x < 4$ f. I don’t know

- 3) A package of M&Ms holds 56 candies, and 14 of them are red. If you buy a big bag of the same type of M&Ms that contains 700 candies, approximately how many would you expect to be red?

- a. 25 b. 140 c. 156
d. 28 **e.** 175 f. I don’t know

- 4) Expand $2x^5(x^2 + 3x - 1)$ to an equivalent expression.

- a.** $2x^7 + 6x^6 - 2x^5$ b. $2x^7 + 6x^5 - 2x^5$ c. $2x^{10} + 6x^5 - 1$
d. $2x^7 + 3x^6 - 2x^5$ e. None of these f. I don’t know

- 5) Find the equation of the line through the points $(8, -1)$ and $(-4, 2)$.

- a. $y = -4x$ b. $y = -\frac{1}{4}x$ **c.** $y = -\frac{1}{4}x + 1$
d. $y = 4x - 1$ e. $y = 4x + 18$ f. I don’t know

6) A basketball game had a total of 149 points scored and 61 shots were made. Assuming only two- and three-pointers were made, how many of them were three-pointers?

a. 27

b. 34

c. 18

d. 31

e. 17

f. I don't know

7) Simplify $\frac{1}{x-7} - \frac{7}{x^2-7x}$ to an equivalent expression.

a. $\frac{1}{x}$

b. $\frac{-6}{x^2-7x}$

c. $\frac{x-7}{x^2-7}$

d. $\frac{1}{x+7}$

e. None of these

f. I don't know

8) Which of the following equations is true for any real value of x and y?

a. $(x+y)^2 = x^2 + y^2$

b. $\frac{1}{x} + \frac{1}{y} = \frac{xy}{x+y}$

c. $|x-y| = |x| - |y|$

d. $\frac{x-y}{y-x} = -1$

e. None of these

f. I don't know

9) Solve the equation $y = \sqrt{x+2} - 1$ for x.

a. $x = \sqrt{y+2} - 1$

b. $x = (y-1)^2$

c. $x = (y+1)^2 - 2$

d. $x = (y-2)^2 + 1$

e. $x = (y+1)^2 + 2$

f. I don't know

10) Find the solution (x, y) to the system of equations $\begin{cases} x-2y=4 \\ 3x+y=3 \end{cases}$.

a. (-1, 4)

b. $\left(\frac{10}{7}, -\frac{9}{7}\right)$

c. (0, -2)

d. $\left(\frac{5}{6}, -\frac{11}{6}\right)$

e. None of these

f. I don't know

11) Simplify $\left(\frac{2ba^2}{3ab^{-1}c^4}\right)^3$ to an equivalent expression with no negative exponents.

a. $\frac{8a^5b^2}{27c^7}$

b. $\frac{2a^6b^3}{3c^{12}}$

c. $\frac{8a^3b^6}{27c^{12}}$

d. $\frac{6a^5}{9b^6c^{12}}$

e. $\frac{8a^6b^3}{27c^{12}}$

f. I don't know

12) For positive real numbers x, y, and z, rewrite $x^{\frac{1}{2}} \cdot y^{\frac{2}{3}} \cdot z^{\frac{5}{6}}$ into a single radical expression.

a. $\sqrt[3]{x \cdot y^2 \cdot z^3}$

b. $\sqrt[6]{x \cdot y^2 \cdot z^5}$

c. $\sqrt[6]{x^3 \cdot y^2 \cdot z^5}$

d. $\sqrt[6]{x^3 \cdot y^4 \cdot z^5}$

e. $\sqrt[11]{x \cdot y^2 \cdot z^5}$

f. I don't know

13) Find the solution set to $|3 + 4x| < 5$.

a. $x < \frac{1}{2}$

b. $-2 < x < \frac{1}{2}$

c. $x > 2$

d. $-\frac{1}{2} < x < 2$

e. None of these

f. I don't know

14) Find the solution(s) to the equation $x^3 + 5x^2 - 6x = 0$.

a. $x = -1$

b. $x = 2$ or $x = -3$

c. $x = -6$ or $x = 1$

d. $x = -6, x = 0,$ or $x = 1$

e. No solution

f. I don't know

15) Find the area of the rectangle shown where one vertex is on $f(x) = x^2 + 2x - 1$.

a. 6

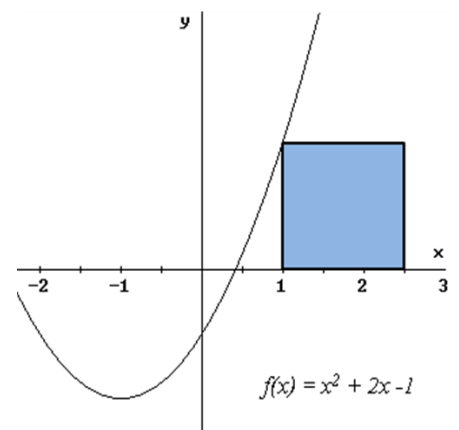
b. 3

c. 1

d. 1.5

e. 5

f. I don't know



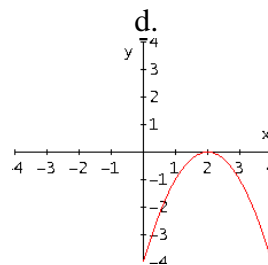
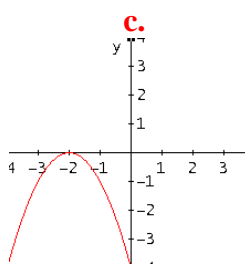
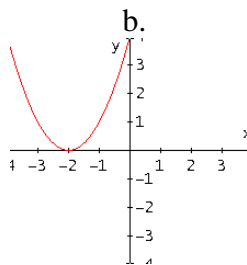
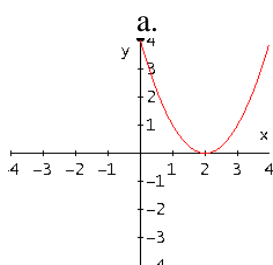
16) Find the equation of the line parallel to $y = 3x + 1$ going through the point $(-2, 1)$.

- a. $y - 1 = 3(x + 2)$ b. $y = 3x - 1$ c. $y + 2 = 3(x - 1)$
- d. $y = -\frac{1}{3}x + 1$ e. None of these f. I don't know

17) Multiply and simplify $\frac{x^2 - 4x + 4}{3 - x} \cdot \frac{2x - 6}{x^2 - 4}$.

- a. $\frac{4 - 2x}{x + 2}$ b. $\frac{2x - 4}{x + 2}$ c. $\frac{x - 2}{x + 2}$
- d. $-\frac{4 - 2x}{x + 2}$ e. None of these f. I don't know

18) Graph $f(x) = -(x + 2)^2$.



- e. None of these f. I don't know

After completing this placement test, you can grade it by going to the solutions found here:

http://mth.pdx.edu/programs/placement/Placement_Questions_Solutions.asp

If you scored a 13 or better, then you should be prepared to take MTH 111. Otherwise, you should try the MTH 70/95 Placement Test to determine which course is appropriate for you.