

Pre-Assessment for Placement Exams

This assessment is meant to give you a starting point if you are looking to review for a math placement exam or to find areas where you could review in math.

Directions: It is best to go in the order of the modules. Check your answers within each module before moving on to the next one. If you miss any questions within a module, there are suggested review videos for you to work through. It is suggested that you work through any topics that you missed before you move on to the next module.

Module A

A1: Complete the following:

a. Simplify $\frac{60}{105}$ b. Rewrite as a mixed number: $\frac{240}{72}$

A2: Complete the following operations:

a. $\frac{4}{5} \times \frac{3}{11}$ b. $\frac{5}{7} \div \frac{2}{3}$ c. $\frac{3}{4} \div 7$ d. $\frac{2}{3} - \frac{1}{3}$

A3: Complete the following operations. Write your answers as improper fractions.

a. $\frac{12}{25} \times \frac{35}{64}$ b. $14 \div \frac{21}{25}$ c. $5 - \frac{2}{3}$ d. $\frac{7}{15} - \frac{3}{25}$

A4: Complete the following operations:

a. 2.4×3.02 b. $0.3 \div 1.5$ c. $2.4 \div 0.8$

A5: Complete the following operations:

a. $(2 - 4)^3 + 10 \div 2 * 3$ b. $\frac{2}{3}(9 - 3)^2 - 3^2 + (-3)^2$

Check your answers before moving on to the next module.

Module A Answers

Note: If you missed any, see module A from the *Review* section on DivideAndConquerMath.com.

A1: a. $\frac{4}{7}$ b. $3\frac{1}{3}$

See section A1 in the review section if you missed any.

A2: a. $\frac{12}{55}$ b. $\frac{15}{14}$ c. $\frac{3}{28}$ d. $\frac{1}{3}$

See section A2 in the review section if you missed any.

A3: a. $\frac{21}{80}$ b. $\frac{50}{3}$ c. $\frac{13}{3}$ d. $\frac{26}{75}$

See section A3 in the review section if you missed any.

A4: a. 7.248 b. 0.2 c. 3

See section A4 in the review section if you missed any.

A5: a. 7 b. 24

See section A5 in the review section if you missed any.

Module B

B1: Simplify the following. Your final answer should not contain any negative exponents.

a. $2x^4y^3 * 3x^6y$

b. $\frac{15x^3y^{-5}}{25x^{-3}y^4}$

c. $(-3x^2y^{-6})^{-3}$

d. $\left(-\frac{4x^6y^{-2}}{6x^3y^{-5}}\right)^{-2}$

B2: Solve the following:

a. $5x + 3 - 2x + 9 = 7x + 5 - 2x - 11$

b. $4(2x - 1) - 2(3x + 5) = 5x - 3(x - 5)$

c. $\frac{1}{2} - \frac{1}{6}(x - 5) = \frac{1}{3}(x + 1) + \frac{2}{3}$

d. $0.2(3x - 1) + 1.8 = 0.55(2x + 4)$

B3: Solve the following. Put your final answer in interval notation.

a. $4x - 5 + 2x - 9 \geq 22$

b. $5 \leq 2x + 3 < 11$

c. $\frac{1}{2}(x - 3) + \frac{3}{4}x \leq \frac{1}{2}(2x + 3) + \frac{3}{8}$

Check your answers before moving on to the next module.

Module B Answers

Note: If you missed any, see module B from the *Review* section on DivideAndConquerMath.com.

B1: a. $6x^{10}y^4$ b. $\frac{3x^6}{5y^9}$ c. $-\frac{y^{18}}{27x^6}$ d. $\frac{9}{4x^6y^6}$

See section B1 in the review section if you missed any.

B2: a. $x = 9$ b. no solution c. $x = \frac{2}{3}$ d. $x = -1.2$

See section B2 in the review section if you missed any.

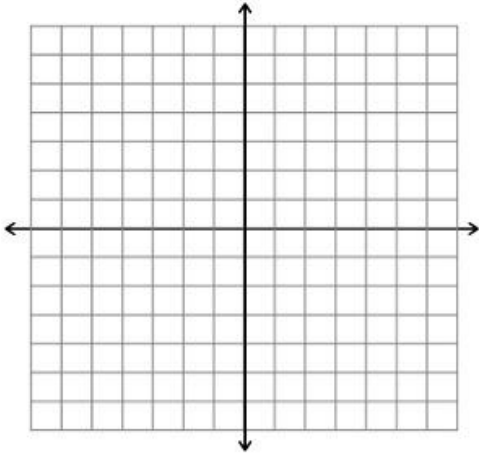
B3: a. $x \geq 6, [6, \infty)$ b. $1 \leq x < 4, [1, 4)$ c. $x \leq \frac{27}{2}, \left(-\infty, \frac{27}{2}\right]$

See section B3 in the review section if you missed any.

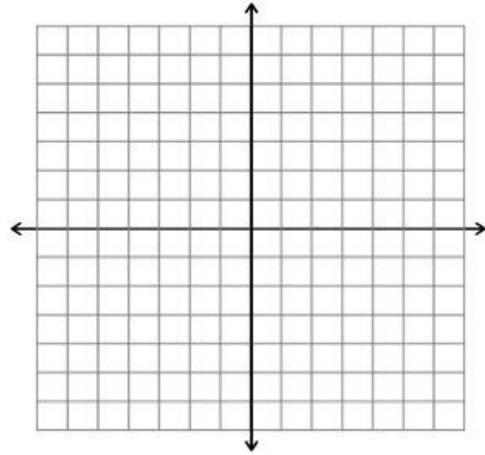
Module C

C1: Graph the following equations.

a. $y = 3x - 2$



b. $5x - 2y = 10$



C1: Find the x- and y-intercepts of: $4x - 5y = 8$

C2: Find the equation of the line that connects the points $(3, -2)$ and $(5, -4)$

C3: Solve the following systems.

a.
$$\begin{cases} 4x + 4y = 6 \\ 2x + y = 10 \end{cases}$$

b.
$$\begin{cases} \frac{1}{3}x - \frac{1}{2}y = \frac{1}{6} \\ -\frac{1}{3}x + \frac{1}{2}y = \frac{1}{6} \end{cases}$$

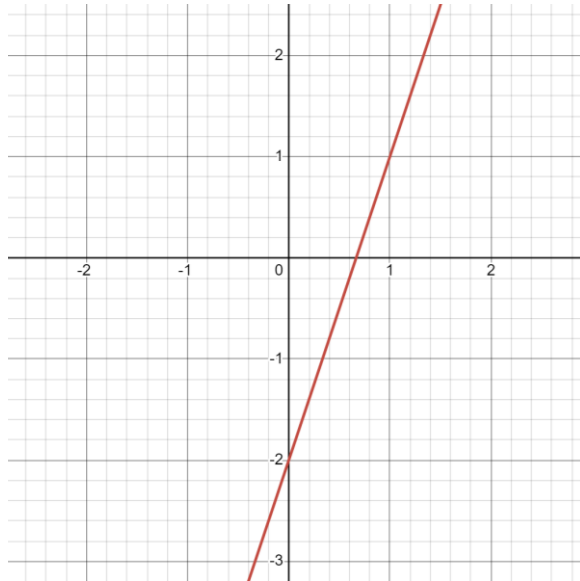
Check your answers before moving on to the next module.

Module C Answers

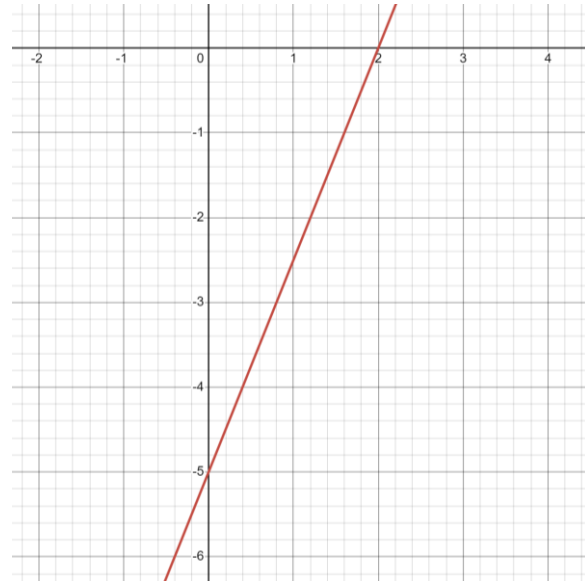
Note: If you missed any, see module C from the *Review* section on DivideAndConquerMath.com.

C1: Graph answers

a.



b.



C1: x-intercept (2,0); y-intercept $(0, -\frac{8}{5})$

See section C1 in the review section if you missed any.

C2: $y = -x + 1$

C3: a. $(\frac{17}{2}, -7)$ b. No solution

See section C2 in the review section if you missed any. C2 will be the review for both modules C2 and C3.

Module D

D1: Complete the following operations.

a. $(4x^3 - 2x^2 + 8x - 7) - (3x^2 - 4x + 2)$

b. $(4x + 2)(3x - 1)$

c. $(2x - 1)^2$

D2: Factor the following polynomials:

a. $4x^2y - 6xy + 10y$

b. $4x - 8xy + 5y^2 - 10y^3$

c. $x^2 + 8x + 12$

d. $x^2 - 25$

D3: Factor the following polynomials:

a. $2x^2 + 5x + 3$

b. $4x^2 + 16x + 15$

c. $x^3 - 125$

D4: Complete the following operations:

a. $(3x^3 - 9x^2y + 6xy^2 - 12y^3) \div 3xy$

b. $(16x^2 - 88x + 121) \div (4x - 11)$

c. $(4x^3 + 3x + 5) \div (2x - 3)$

Check your answers before moving on to the next module.

Module D Answers

Note: If you missed any, see module D from the *Review* section on DivideAndConquerMath.com.

D1: a. $4x^3 - 5x^2 + 12x - 9$ b. $12x^2 + 2x - 2$
 c. $4x^2 - 4x + 1$

See section D1 in the review section if you missed any.

D2: a. $2y(2x^2 - 3x + 5)$ b. $(4x + 5y^2)(1 - 2y)$
 c. $(x + 6)(x + 2)$ d. $(x - 5)(x + 5)$

See section D2 in the review section if you missed any.

D3: a. $(2x + 3)(x + 1)$ b. $(2x + 3)(2x + 5)$
 c. $(x - 5)(x^2 + 5x + 25)$

See section D3 in the review section if you missed any.

D4: a. $\frac{x^2}{y} - \frac{4y^2}{x} - 3x + 2y$ b. $4x - 11$
 c. $2x^2 + 3x + 6 + \frac{23}{2x-3}$

See section D4 in the review section if you missed any.

Module E

E1: Solve the following.

a. $x^2 - x - 12 = 0$

b. $(2x - 1)^2 = 12$

c. $5x^2 + x - 3 = 0$

d. $x^2 + 6x = -1$

E2: Solve the following.

a. $|4x - 1| = 9$

b. $|5x + 4| + 9 = 3$

c. $|4x - 8| > 12$

d. $|3x + 1| > -5$

E3: Simplify the following radicals.

a. $\sqrt{25}$

b. $\sqrt[3]{250}$

c. $\sqrt[4]{-16}$

d. $\sqrt[3]{-8x^6}$

e. $\sqrt{12x^6y^7}$

f. $\sqrt[3]{24x^7y^{11}}$

E4: Complete the following operations.

a. $\sqrt{45} + 7\sqrt{5}$

b. $\sqrt[3]{x^2}(\sqrt[3]{x^2} - \sqrt[3]{27xy})$

c. $(3\sqrt{2} - \sqrt{6})(4\sqrt{3} - \sqrt{10})$

d. $(3\sqrt{5} - \sqrt{10})^2$

e. $\frac{5}{\sqrt{3} + \sqrt{6}}$

E5: Simplify the following.

a. $8^{\frac{2}{3}}$

b. $\left(\frac{25}{9}\right)^{-\frac{3}{2}}$

c. $x^{\frac{2}{3}}y^{\frac{1}{5}} * x^{\frac{1}{2}}y^{\frac{1}{3}}$

Check your answers before moving on to the next module.

Module E Answers

Note: If you missed any, see module E from the *Review* section on DivideAndConquerMath.com.

E1: a. $x = -3, x = 4$ b. $x = \frac{1}{2} \pm \sqrt{3}$
 c. $x = -\frac{1}{10} \pm \frac{\sqrt{61}}{10}$ d. $x = -3 \pm 2\sqrt{2}$

See section E1 in the review section if you missed any.

E2: a. $x = \frac{5}{2}, x = -2$ b. no solution
 c. $x > 5$ or $x < -1$ d. infinite solutions

See section E2 in the review section if you missed any.

E3: a. 5 b. $5^3\sqrt{2}$ c. does not exist
 d. $-2x^2$ e. $2x^3y^3\sqrt{3y}$ f. $2x^2y^3\sqrt[3]{3xy^2}$

See section E3 in the review section if you missed any.

E4: a. $10\sqrt{5}$ b. $x^3\sqrt{x} - 3x^3\sqrt{y}$
 c. $12\sqrt{6} - 6\sqrt{5} - 12\sqrt{2} + 2\sqrt{15}$
 d. $55 - 30\sqrt{2}$ e. $\frac{5\sqrt{3}-5\sqrt{6}}{-3}$

See section E4 in the review section if you missed any.

E5: a. 4 b. $\frac{27}{125}$ c. $x^{\frac{7}{6}}y^{\frac{8}{15}}$

See section E5 in the review section if you missed any.

Module F

F1: Let $f(x) = 5x - 1$, $g(x) = x + 2$, $h(x) = x^2 + 5x + 6$. Complete the following operations.

a. $h(-1)$

b. $f(x + h)$

c. $(f * g)(x)$

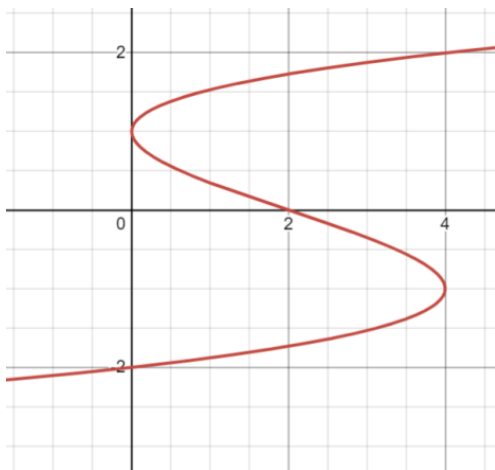
d. $\left(\frac{h}{g}\right)(x)$

e. $(g - f)(2)$

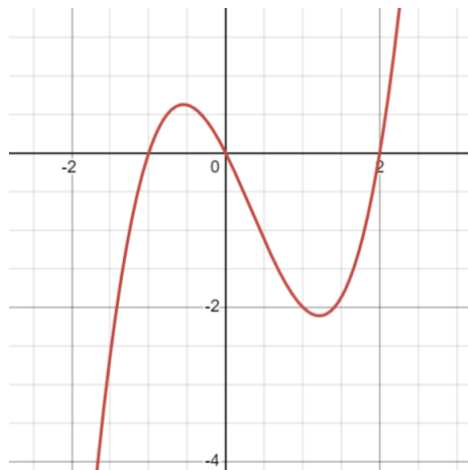
f. $(h \circ g)(x)$

F2: Determine whether the following are one-to-one functions.

a.



b.



F2: Find the inverse of the following functions.

a. $f(x) = 3x + 6$

b. $f(x) = \frac{3}{x-2}$

F3: Solve the following.

a. $2^{3x} = 16^{5x-1}$

b. $\left(\frac{1}{25}\right)^{2x} = 125^{2x+2}$

F4: Complete the following:

a. Rewrite in logarithmic form: $2^3 = 8$

b. Expand: $\log\left(\frac{x^2y^4}{z^3}\right)$

c. Write as a single logarithm: $\ln(ab) - \ln(bc) + 2 \ln c$

Check your answers before moving on to the next module.

Module F Answers

Note: If you missed any, see module F from the *Review* section on DivideAndConquerMath.com.

F1: a. 2 b. $5x + 5h - 1$ c. $5x^2 + 9x - 2$
 d. $x + 3$ e. -5 f. $x^2 + 9x + 20$

See section F1 in the review section if you missed any.

F2: a. not a function b. it is a function but not one-to-one

See section F2 in the review section if you missed any.

F2: a. $f^{-1}(x) = \frac{1}{3}x - 2$ b. $f^{-1}(x) = \frac{3}{x} + 2$

See section F2 in the review section if you missed any.

F3: a. $x = \frac{4}{17}$ b. $x = -\frac{3}{5}$

See section F3 in the review section if you missed any.

F4: a. $\log_2 8 = 3$ b. $2 \log x + 4 \log y - 3 \log z$
 c. $\ln(ac)$

See section F3 in the review section if you missed any.