Math 2 Fall Study Guide

Directions

1. Print this study guide if possible, or else copy down the problems (the small, indented text) in approximately the same place on the page as it is here. You do not need to copy the standards or anything else in large text, but no points will be given for answers given without their problems directly above them.

2. Every item in the study guide is copied from the notes. For sections that you know how to do, write your answers and then check them in the notes. For sections that you do not remember, it is ok if you copy answers from the online notes.

3. Do not look at anyone else's study guide, and do not let another student see your study guide. You may get the answers from the notes posted online, but not from each other. Please don't be so lazy that you cheat on an assignment for which the teacher posted every answer!

4. Turn in each chapter to the Fall Study Guide assignment for that chapter in Google Classroom before midnight on its due date. Sections may be turned in late for partial credit until Monday, December 14.

1-A Fractions

❶ Convert a whole number to a fraction.

❶ 10

❷ Multiply a fraction.

❷ a) $\frac{2}{5} \times \frac{3}{4}$ b) $\frac{2}{5} \times 3$

❸ Divide by a fraction.

❸ a) $\frac{2}{5} \div \frac{4}{3}$ b) $\frac{2}{5} \div \frac{1}{3}$

❹ Reduce a fraction.

❹ Reduce $\frac{140}{350}$.

❺ Add or subtract fractions with the same denominator.

❺ $\frac{12}{20} - \frac{5}{20}$

❻ Add or subtract fractions with different denominators.

❻ $\frac{3}{5} - \frac{1}{4}$

❼ Convert a percentage to a decimal or fraction.

❼ a) 9% b) .09%

1-B Expressions

term • expression • argument • polynomial • monomial • binomial • trinomial • degree • constant • linear • quadratic • cubic • standard form • coefficient • leading coefficient • scientific notation

❶ Identify the terms of an expression and their coefficients.

❶ Identify the terms and coefficients of the expression $5x^6 + x^3 + \frac{8x}{7} - 9$.

❷ Identify the argument of a function.

❷ Identify the arguments in the expression $\sqrt{x - \cos 3x}$.

❸ Multiply a rational expression by an integer.

❸ Identify the error, if any, in each of the following attempts to multiply the expression $\frac{11(4x) - \sqrt{10x}}{5}$ by 2.

a) $\frac{22(8x) - 2\sqrt{10x}}{5}$ b) $\frac{22(4x) - \sqrt{20x}}{5}$

c) $\frac{22(4x) - 2\sqrt{10x}}{10}$ d) $\frac{22(4x) - 2\sqrt{10x}}{5}$

❹ Simplify a fraction with multiple terms in the numerator or denominator.

❹ $\frac{6x^2 - 9x\sqrt{30x}}{6x^2 - 9x}$

❺ Classify a polynomial in one variable.

❺ Write the following polynomials in standard form, classify them, and identify the leading coefficient.

a) $x + 4x^3$ b) $-15x$

c) $8x^2 - 2x^9 + 3$ d) $2 - \frac{7x^3}{5} + 6x^2 + x$

❻ Convert calculator notation to scientific notation and to standard notation.

❻ a) 2.57E3 b) 2.57E−3

❼ Convert standard notation to scientific notation.

❼ a) 2700 b) 2700 exactly c) .002700

1-C Solving Equations

inverse • equation

❶ Apply order of operations.

❶ a) $4 + 5(2)^3$ b) -2^4 c) $(-2)^4$ d) $\frac{5+6}{5-3}$

❷ Identify the inverse of an operation by definition.

❷ Identify the inverse of each operation in the equation $175x + 900 = 1600$.

❸ Solve an equation.

❸ a) $3x + 1 = 13$ b) $3x^2 + 1 = 13$ c) $\frac{3}{5}(3x + 1) + 1 = 13$ d) $5(3x + 1) + 1 = 4x$

❹ Show proper notation in solving an equation.

❹ Sam has $900 this year and plans to save $175 per year. Solve the equation $175x + 900 = 1600$ to determine when she will have $1600.

❺ Express an answer.

❺ Give an appropriate answer for each question.

a) Solve $7x = 9$.

b) Solve $7x = 9$. Round your answer to the nearest tenth.

c) If a pack of seven pens costs \$9, what is the price per pen?

1-D Properties of Exponents

❶ Simplify an expression using properties of exponents.

❶ Simplify.

a) $ab^3(a^2b)^5$

b) $(\frac{5a}{2})^3$

c) $(\frac{5a}{2})^{-3}$

d) $10(\frac{5a}{2})^{-3}$

e) $\frac{8a^{-3}}{6a^4}$

f) $\frac{6\times10^{-12}}{2\times10^{20}}$

❶ Simplify $\frac{(2a^4b)^3b^6}{a^{12}bc^2}$, and write it without a fraction. State each property of exponents used.

1-E Addition, Subtraction, and Multiplication of Polynomials

conjugate

❶ Add or subtract polynomials.

❶ $5(4x^2 + 9x - 3) - (11x - 4)$

❷ Multiply two polynomials.

❷ $(4x^2 - 3x)(x + 5)$

❸ Multiply more than two polynomials.

❸ $(x + 2)(x + 5)(x - 10)$

❹ Multiply a binomial by its conjugate.

❹ $(3x - 10)(3x + 10)$

❺ Square a binomial.

❺ $(3x - 10)^2$

CHAPTER TWO: FUNDAMENTALS OF GEOMETRY — Due Wednesday, 12/9

2-A Geometric Notation

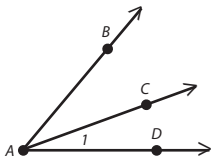
point • line • ray • line segment • plane • parallel • perpendicular • angle • vertex • congruent • midpoint

❶ Identify and label geometric components.

❶ Sketch and label a ray that starts at *R* and passes through *A* and *Y*.

❷ Refer to angles by name.

❷ Name each angle shown at right.



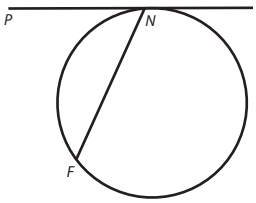
2-B Circles

circle • radius • diameter • chord • secant • tangent • point of tangency • arc • major arc • minor arc • semicircle • central angle • inscribed angle • circumscribed angle

❶ Identify types of lines and line segments intersecting circles.

❶ Identify the following in the diagram at right.

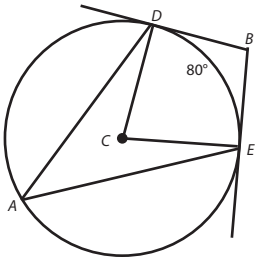
a) $\overline{FN}$ b) $\overline{PN}$



❷ Calculate the measure of an angle that intercepts two points on a circle.

❷ Find the measures of the following angles in the diagram at right.

a) $\angle DCE$ b) $\angle DAE$ c) $\angle DBE$

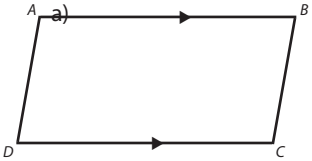


2-C Quadrilaterals

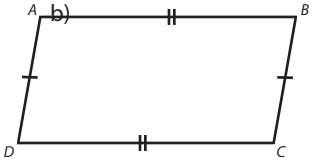
❶ Identify types of quadrilaterals.

❶ Identify the quadrilaterals below.

a)

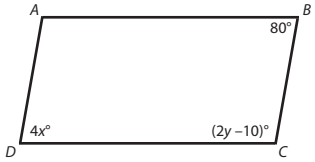


b)



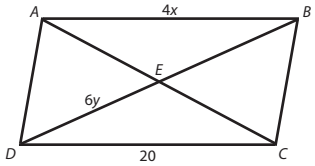
❷ Calculate values based on angles within a parallelogram.

❷ Find *x* and *y*, given *ABCD* is a parallelogram.



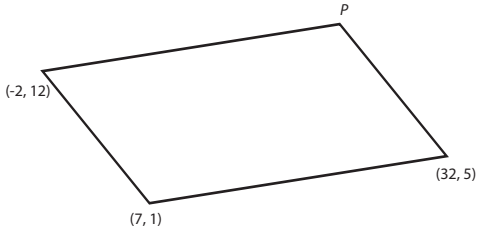
❸ Calculate values based on lengths within a parallelogram.

❸ Find *x* and *y*, given *ABCD* is a parallelogram and *DB* = 24.



❹ Identify the coordinates of a vertex of a parallelogram, given the coordinates of the other vertices.

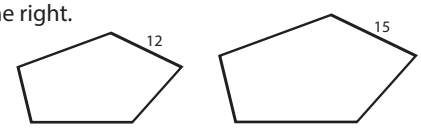
❹ Identify the coordinates of *P* in the parallelogram at right.



2-D Scale Factors

❶ Determine a scale factor that maps a figure onto a similar figure.

❶ Determine the scale factor that maps the pentagon on the left onto the similar pentagon on the right.

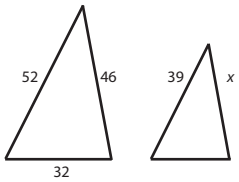


❷ Calculate lengths in similar figures based on a scale factor.

❷ Find *x*, given the triangles are similar.

❸ Find the perimeter of a similar figure.

❸ Find the perimeter of the smaller triangle, given it is similar to the larger triangle.



❹ Find the area of a similar figure.

❹ Find the area of the smaller triangle, given it is similar to the larger triangle which has an area of 720.

2-E Key Geometric Formulas

❶ Write the equation of a line, given two points on the line.

❶ Write an equation of the line passing through the points (-1, 6) and (3, 4).

❷ Find the midpoint of a line segment.

❷ Find the midpoint of the line segment from (-1, 6) to (3, 4).

❸ Find the distance between two points.

❸ Find the distance between the points (-1, 6) and (3, 4).

CHAPTER THREE: RIGHT TRIANGLE TRIGONOMETRY — Due Friday, 12/11

3-A Special Right Triangles

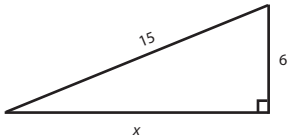
Pythagorean Theorem • radical

❶ Rationalize a denominator.

❶ $\frac{20}{\sqrt{2}}$

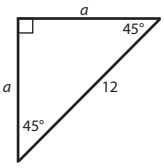
❷ Calculate the length of the third side of a right triangle.

❷ Find length x in the triangle shown.



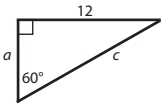
❸ Find unknown lengths in a 45° right triangle.

❸ Find the missing lengths in the triangle at right, and simplify.



❹ Find unknown lengths in a 30° right triangle.

❹ Find the missing lengths in the triangle at right, and simplify.

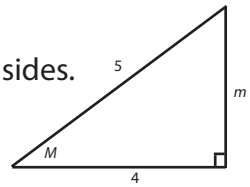


3-B Trigonometric Functions

sine • cosine • tangent

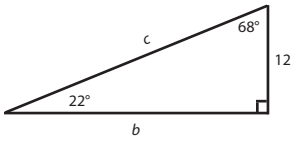
❶ Find the sine, cosine, and tangent of an acute angle in a right triangle with two known sides.

❶ Find the sine, cosine, and tangent of M shown at right.



❷ Calculate a side length in a right triangle based on a known angle and known side length.

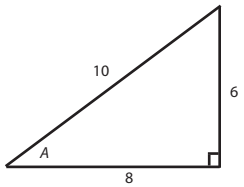
❷ Solve for c in the triangle at right.



3-C Inverse Trigonometric Functions

❶ Calculate an angle measure in a right triangle based on two known side lengths.

❶ Solve for A in the triangle at right.



❷ Solve a right triangle.

❷ Solve the triangle shown below.

a)