

PREREQUISITES: ALGEBRA I

Mathematics builds! To be successful in Algebra I, there are certain arithmetic skills that you are expected to already have mastered. These prerequisites are summarized on this sheet. Although some of the topics listed here may be reviewed in Algebra I, you are expected to already have some familiarity with them, so that we can quickly move beyond the basics to higher-level discussions.

Each instructor has the option of giving a quiz over this prerequisite material during the first couple weeks of class.

“Sample Prerequisite Problems” (with solutions) are available on the web.

DON'T PANIC if you're rusty on some of this material! The Math Department teachers are all available to help you review. It's very important, however, that you get this material back at your fingertips right away, because we'll be drawing on these skills frequently.

1. basic properties of 0 and 1
2. multiplication tables through 12
3. understanding of our base ten number system: place values; ordering numbers
4. multiplying and dividing by powers of ten
5. addition, subtraction, multiplication, and division of whole numbers
6. addition, subtraction, multiplication, and division of decimals
7. addition, subtraction, multiplication, and division of fractions
8. simple arithmetic with signed numbers, like $(-1)(3)(-2)$ and $3 - (-4)$
9. rounding numbers (to the nearest hundredth, etc.)

SAMPLE PREREQUISITE PROBLEMS: ALGEBRA I

(no calculators allowed)

PART 1: Multiplication Tables (through 12)

You will have two minutes to do the following 24 multiplication problems. Then, this sheet will be collected and you will be given the remainder of the Prerequisite Quiz.

$2 \times 6 =$

$3 \times 2 =$

$4 \times 9 =$

$5 \times 2 =$

$8 \times 8 =$

$9 \times 3 =$

$10 \times 7 =$

$2 \times 4 =$

$5 \times 1 =$

$6 \times 8 =$

$7 \times 9 =$

$8 \times 10 =$

$0 \times 10 =$

$1 \times 11 =$

$7 \times 3 =$

$11 \times 9 =$

$6 \times 4 =$

$7 \times 11 =$

$3 \times 7 =$

$4 \times 5 =$

$9 \times 5 =$

$10 \times 6 =$

$12 \times 10 =$

$9 \times 12 =$

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(no calculators allowed)

PART 2: Arithmetic Skills

You will have 15 minutes to do the following arithmetic problems. Neatly show all work leading to your answers on this sheet.

1. (basic properties of 0 and 1)

$$0 \times 57 =$$

$$-124 \times 0 =$$

$$1 \times 49.2 =$$

$$\frac{2}{7} \times 1 =$$

$$\frac{147}{1} =$$

$$\frac{0}{7} =$$

$$0 \times (-23.54) =$$

$$0 \times 3 \times 4 =$$

$$(3)(1)(7) =$$

2. (base ten number system: place values; ordering numbers)

Fill in the blanks with the correct place value (for example: ones, tens, tenths, hundredths, etc).

In the decimal **3,479.016**, the digit 3 represents three _____ and the digit 1 represents one _____.

Circle the greater number: 5,000,396 or 997,384

Circle the greater number: 0.00706 or 0.032

3. (multiplying and dividing by powers of ten)

Fill in the blanks:

$$1,000 \times 3.47 =$$

$$2.6 \div 100 =$$

$$\frac{1,000,000}{1,000} =$$

4. (addition, subtraction, and multiplication of whole numbers)

$$\begin{array}{r} 849 \\ + 267 \\ \hline \end{array}$$

$$\begin{array}{r} 756 \\ - 693 \\ \hline \end{array}$$

$$\begin{array}{r} 126 \\ \times 24 \\ \hline \end{array}$$

5. (division of whole numbers)

$$57 \overline{)1482}$$

6. Suppose that 746 marbles are divided into piles of size 4 each. How many piles can be made, and how many marbles will be left over?

Number of piles:

Number of marbles left over:

7. (addition, subtraction, multiplication, and division of decimals)
(Feel free to set up these problems in the space provided below.)

$$3.21 + 0.047 =$$

$$3.21 - 0.047 =$$

$$3.21 \times 0.047 =$$

$$0.235 \div 0.5 =$$

8. (addition, subtraction, multiplication, and division of fractions)

$$\frac{1}{2} + \frac{2}{7} =$$

$$\frac{1}{2} - \frac{2}{7} =$$

$$\frac{1}{2} \cdot \frac{2}{7} =$$

$$\frac{1}{2} \div \frac{2}{7} =$$

9. (arithmetic with signed numbers)

$$(-2)(-3)(-1) =$$

$$- \frac{(6)(-2)}{-3} =$$

10. (arithmetic with signed numbers)

$$2 - 5 =$$

$$(-3) + (-1) =$$

$$-3 - (-2) =$$

11. (rounding numbers)

Round to the nearest tenth: 274.3852

Round to the nearest hundredth: 274.3852

Round to the nearest thousandth: 274.3852

SOLUTIONS: All solutions are given left to right, top to bottom

Multiplication Tables:

12, 6, 36, 10

64, 27, 70, 8

5, 48, 63, 80

0, 11, 21, 99

24, 77, 21, 20

45, 60, 120, 108

Arithmetic Skills:

1. 0, 0, 49.2 $\frac{2}{7}$, 147, 0 0, 0, 21

2. thousands, hundredths 5,000,396 0.032

3. 3,470 0.026 1,000

4. 1,116 63 3,024

5. 26

6. 186 piles, 2 left over

7. 3.257 3.163 0.15087 0.47

8. $\frac{11}{14}$ $\frac{3}{14}$ $\frac{1}{7}$ $\frac{7}{4}$

9. -6 -4

10. -3 -4 -1

11. tenth: 278.4

hundredth: 278.39

thousandth: 278.385