



Student Instruction Sheet: Unit 1 MFM 2P

Diagnostic Activity

Suggested Time: 20 minutes

What's important in this lesson:

Work carefully through the questions in this introductory activity. These questions have been designed to see what knowledge you already have about the topics that you will cover in the first unit.

Complete the following steps:

1. Read through the lessons on your own.
2. Complete all questions provided.
3. If you have any questions, ask your teacher.
4. Check your answers with the teacher.

Hand in the following:

1. Hand in this Diagnostic activity only if your teacher requests it.

Questions for the teacher:



Diagnostic Activity: Part A: Integer and Fraction Rules

1. Adding integers: If the signs are the *same*, the answer has the same sign.
If the signs are *different*, the answer has the sign of the larger number.

$$\begin{array}{l} \text{[a]} \quad (-4) + (-5) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[b]} \quad 18 + (-38) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[c]} \quad (-25) + 75 \\ = \\ = \end{array}$$

2. Subtracting integers: Add the opposite of the subtracted number.
Then follow the adding rules.

$$\begin{array}{l} \text{[a]} \quad 6 - (-2) \\ = 6 + 2 \\ = \end{array}$$

$$\begin{array}{l} \text{[b]} \quad (-3) - (-7) \\ = (-3) + 7 \\ = \end{array}$$

$$\begin{array}{l} \text{[c]} \quad (-10) - 5 \\ = (-10) + (-5) \\ = \end{array}$$

3. Multiplying and Dividing integers: If signs are the *same*, the answer is positive.
If signs are *different*, the answer is negative.

$$\begin{array}{l} \text{[a]} \quad 8(-3) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[b]} \quad (-6)(-7) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[c]} \quad (-9)(2) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[d]} \quad (-15) \div (-5) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[e]} \quad 24 \div (-4) \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[f]} \quad 12 \div 6 \\ = \\ = \end{array}$$

4. Adding or Subtracting Fractions: Find a common denominator *first*,
then add or subtract across.

$$\begin{array}{l} \text{[a]} \quad \frac{1}{2} + \frac{1}{5} \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[b]} \quad \frac{4}{5} - \frac{1}{10} \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[c]} \quad -\frac{1}{3} + \frac{1}{4} \\ = \\ = \end{array}$$

5. Multiplying Fractions: Put in improper form. Reduce to lowest terms, then multiply
across the numerators, then the denominators.

$$\begin{array}{l} \text{[a]} \quad \frac{5}{6} \times \frac{2}{3} \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[b]} \quad 1\frac{1}{2} \times \frac{4}{7} \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[c]} \quad \frac{8}{3} \times \frac{12}{16} \\ = \\ = \end{array}$$

6. Dividing Fractions: Multiply by the reciprocal of the second fraction.

$$\begin{array}{l} \text{[a]} \quad \frac{1}{9} \div \frac{1}{3} \\ = \\ = \end{array}$$

$$\begin{array}{l} \text{[b]} \quad \frac{2}{7} \div \frac{8}{21} \\ = \\ = \end{array}$$



Diagnostic Activity:

Part B: Using the Distributive Property to Expand and Simplify

1. Expand each product. (“Expand” means to multiply through the brackets.)

$$\begin{aligned} \text{[a]} \quad & 3(x + 5) \\ & = 3x + 15 \end{aligned}$$

$$\begin{aligned} \text{[b]} \quad & 2(x - 7) \\ & = \end{aligned}$$

$$\begin{aligned} \text{[c]} \quad & -3(2x - 4) \\ & = \end{aligned}$$

$$\begin{aligned} \text{[d]} \quad & 5(x^2 + 3x - 6) \\ & = \end{aligned}$$

$$\begin{aligned} \text{[e]} \quad & -7(x^2 - 4x + 6) \\ & = \end{aligned}$$

2. Expand and simplify each product. Expand using “FOIL”:
multiply **FIRST** terms of brackets together, then multiply **OUTSIDE** terms together,
then **INSIDE** terms of brackets together, then **LAST** terms.
In this context, “simplify” means to get the smallest expression possible.

$$\begin{aligned} \text{[a]} \quad & (m + 4)(m + 5) \\ & = m^2 + 5m + 4m + 20 \\ & = m^2 + 9m + 20 \end{aligned}$$

$$\begin{aligned} \text{[b]} \quad & (x + 2)(x + 8) \\ & = \\ & = \end{aligned}$$

$$\begin{aligned} \text{[c]} \quad & (k + 3)(k - 7) \\ & = \\ & = \end{aligned}$$

$$\begin{aligned} \text{[d]} \quad & (x - 6)(x - 9) \\ & = \\ & = \end{aligned}$$

$$\begin{aligned} \text{[e]} \quad & (b - 4)(b + 10) \\ & = \\ & = \end{aligned}$$

$$\begin{aligned} \text{[f]} \quad & (x + 5)(x - 5) \\ & = \\ & = \end{aligned}$$

3. Square each binomial and simplify.

$$\begin{aligned} \text{[a]} \quad & (x + 4)^2 \\ & = (x + 4)(x + 4) \\ & = \\ & = \end{aligned}$$

$$\begin{aligned} \text{[b]} \quad & (a - 7)^2 \\ & = \\ & = \\ & = \end{aligned}$$