Section 1.8 Multiplying and Dividing Real Numbers

**Before Class:**

- □ Read the objectives on page 53.
- □ Read the **Helpful Hint** boxes on pages 54 and 55.
- □ Complete the exercises:
  
  1. If we multiply an even number of negative numbers, the product is
     ____________________________.
  
  2. The base of the exponential expression $-4^3$ is ________________.
  
  3. Two numbers whose product is 1 are called __________________________ or
     __________________________ of each other.

**During Class:**

- □ **Write your class notes.** Neatly write down all examples shown as well as key terms or phrases with definitions. If not applicable or if you were absent, watch the Lecture Series (DVD) for this section and do the same (write down the examples shown as well as key terms or phrases). Insert more paper as needed.

<table>
<thead>
<tr>
<th>Class Notes/Examples</th>
<th>Your Notes</th>
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**Answers:** 1) positive  2) 4  3) reciprocals; multiplicative inverses

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<th>Class Notes (continued)</th>
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(Insert additional paper as needed.)
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Practice:

☐ Complete the Vocabulary and Readiness Check on page 60.

☐ Next, complete any incomplete exercises below. Check and correct your work using the answers and references at the end of this section.

Review this example:
1. Multiply.
   a. \((-1.2)(0.05)\)
   b. \(\frac{2}{3}\left(-\frac{7}{10}\right)\)
   c. \(-\frac{4}{5}(-20)\)
   a. \((-1.2)(0.05) = -[1.2](0.05) = -0.06\)
   b. \(\frac{2}{3}\left(-\frac{7}{10}\right) = -\frac{2 \cdot 7}{3 \cdot 10} = -\frac{2 \cdot 7}{3 \cdot 2 \cdot 5} = \frac{7}{15}\)
   c. \(-\frac{4}{5}(-20) = \frac{4 \cdot 20}{5 \cdot 1} = \frac{4 \cdot 4 \cdot 5}{5 \cdot 1} = \frac{16}{1} = 16\)

Your turn:
2. Multiply.
   a. \(2(-1)\)
   b. \(-5(-10)\)
   c. \(\frac{2}{3}\left(-\frac{4}{9}\right)\)

Review this example:
3. Evaluate.
   a. \((-2)^3\)
   b. \(-2^3\)
   a. \((-2)^3 = (-2)(-2)(-2) = -8\)
   b. \(-2^3 = -2 \cdot 2 \cdot 2 = -8\)

Your turn:
4. Evaluate.
   a. \((-2)^4\)
   b. \(-2^4\)

Review this example:
5. Divide.
   a. \(\frac{-36}{3}\)
   b. \(\frac{2}{3} \div \left(-\frac{5}{4}\right)\)
   a. \(\frac{-36}{3} = -12\)
   b. \(\frac{2}{3} \div \left(-\frac{5}{4}\right) = \left(-\frac{2 \cdot 5}{3 \cdot 4}\right) = \frac{-8}{15}\)

Your turn:
6. Divide.
   a. \(\frac{18}{-2}\)
   b. \(-\frac{5}{9} \div \left(-\frac{3}{4}\right)\)
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Review this example:

7. Simplify: \( \frac{(-12)(-3)+3}{-7-(-2)} \)

\[
\frac{(-12)(-3)+3}{-7-(-2)} = \frac{36+3}{-7+2} = \frac{39}{-5} = -\frac{39}{5}
\]

Your turn:

8. Simplify: \( \frac{6-2(-3)}{4-3(-2)} \)

Review this example:

9. If \( x = -2 \) and \( y = -4 \), evaluate \( x^4 - y^2 \).

Replace \( x \) with \(-2\) and \( y \) with \(-4\).

\[
x^4 - y^2 = (-2)^4 - (-4)^2
= 16 - 16
= 0
\]

Your turn:

10. If \( x = -5 \) and \( y = -3 \), evaluate \( 2x^2 - y^2 \).

Next, insert your homework. Make sure you attempt all exercises asked of you and show all work, as in the exercises above. Check your answers if possible. Clearly mark any exercises you were unable to correctly complete so that you may ask questions later. DO NOT ERASE YOUR INCORRECT WORK. THIS IS HOW WE UNDERSTAND AND EXPLAIN TO YOU YOUR ERRORS.

Answer | Text Ref | Video Ref
--- | --- | ---
1 | a. \(-0.06\)  
   b. \(-\frac{7}{15}\)  
   c. 16 | Ex 3, p. 55 | 6 | a. \(-9\)  
   b. \(\frac{20}{27}\) | Sec 1.8, Ex 63, 81
2 | a. \(-2\)  
   b. 50  
   c. \(-\frac{8}{27}\) | Sec 1.8, Ex 3, 5, 27 | 7 | \(-\frac{39}{5}\) | Ex 9a, p. 58
3 | a. \(-8\)  
   b. \(-8\) | Ex 4a, b, p. 55 | 8 | \(\frac{6}{5}\) | Sec 1.8, Ex 97
4 | a. 16  
   b. \(-16\) | Sec 1.8, Ex 43, 44 | 9 | 0 | Ex 10b, p. 59
5 | a. \(-12\)  
   b. \(-\frac{8}{15}\)  
   c. | Ex 7b, c, p. 57 | 10 | 41 | Sec 1.8, Ex 105