Chapter 3: Diagnostic Test

Name_____

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The purpose of this test is to see how well you know fractions. We recommend that you work this diagnostic test *before* your instructor tests you on this chapter. Allow yourself about an hour to do this test.

Complete solutions for all the problems on this test, together with section references, are given in the Answer Section. You should study the sections referred to for the problems you do incorrectly.

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1. Change the improper fractions to mixed numbers.

   (a) $\frac{7}{4}$ (b) $\frac{63}{29}$

   (1a)_____

   (1b)_____

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2. Change the mixed numbers to improper fractions.

   (a) $2\frac{3}{4}$ (b) $15\frac{7}{12}$

   (2a)_____

   (2b)_____

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3. Determine which of the following pairs of fractions are equivalent (have equal values). If the fractions are not equivalent, state which one is larger.

   (a) $\frac{7}{9}$, $\frac{21}{27}$ (b) $\frac{5}{9}$, $\frac{41}{73}$

   (3a)_____

   (3b)_____

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4. State whether each of the following numbers is prime or composite.

(a) 31 (b) 51 (c) 71

(4a) _____

(4b) _____

(4c) _____

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5. Perform the indicated operations.

(a) $2 + 3\frac{1}{5}$ (b) $4\frac{2}{3} + 3\frac{1}{2}$

(5a) _____

(5b) _____

(c) $\frac{5}{6} \times \frac{3}{20}$ (d) $\frac{2}{3} \times 111$

(5c) _____

(5d) _____

(e) $\frac{3}{8} \div \frac{9}{16}$ (f) $4\frac{1}{5} \times 2\frac{1}{7}$

(5e) _____

(5f) _____

(g) $2\frac{2}{9} \div 3\frac{1}{3}$ (h) $\frac{\frac{5}{8}}{\frac{5}{6}}$

(5g) _____

(5h) _____

(i) $\dfrac{\frac{3}{8} + \frac{5}{8}}{4\frac{1}{3}}$

(5i) _____

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6. Reduce to lowest terms.

(a) $\frac{30}{42}$ (b) $\frac{180}{540}$

(6a) _____

(6b) _____

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7. Use Euclid's Algorithm as an aid to reduce this fraction to lowest terms.

$\frac{217}{248}$

(7) _____

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8. Add: $27\frac{2}{9}$
$18\frac{1}{2}$
$4\frac{3}{4}$
$10\frac{7}{8}$

(8) _____

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9. Subtract: $124\frac{2}{3}$
$- 17\frac{4}{5}$

(9) _____

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10. Perform the operations in the correct order.

(a) $6 + 2 \times \frac{3}{4}$ (10a)_____

(b) $4 \cdot \left(\frac{3}{4}\right)^2 - \frac{1}{2}$ (10b)_____

(c) $\frac{2}{3} \div \frac{4}{3} \cdot \frac{2}{5}$ (10c)_____

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11. When a $1\frac{1}{8}$-pound steak was trimmed of fat, it weighed $\frac{3}{4}$ pound. How much of the steak was fat?

(11)_____

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12. How many tablets, each containing 3 milligrams of medicine, must be used to make up a $7\frac{1}{2}$-milligram dosage?

(12)_____

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13. How many square yards of carpet will be needed to carpet a rectangular room that is $7\frac{1}{2}$ yards long and $4\frac{2}{3}$ yards wide?

(13)_____
