Dimensional Analysis 2nd edition Horntvedt Test Bank

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Fractions

CHAPTER 2

1. When working with fractions, what is the term for the greatest common number that divides evenly into both the numerator and the denominator?
    1. Divisor
    2. Factor
    3. Dividend
    4. Product

2. When adding fractions with different denominators, the fractions must be changed to have a common denominator. What is the term for this change?
    1. Transforming
    2. Averaging
    3. Lowering
    4. Raising

3. Reducing a fraction to the lowest terms involves which of the following?
    1. Finding a factor that divides evenly into both the numerator and denominator
    2. Finding a common denominator for the fractions and adding the numerators
    3. Finding a common denominator for the fractions and subtracting the smaller fraction from the larger one
    4. Multiplying the numerators and denominators of the fractions

4. Which statements are true when discussing improper fractions? ***Select all that apply.***
    1. Numerators are greater than or equal to their denominators.
    2. Improper fractions contain both a whole number and a fraction.
    3. The value of an improper fraction is greater than or equal to one.
    4. Numerators are less than their denominators.
    5. Improper fractions contain a numerator and denominator that are both divisible by the number two.

5. Which of the following operations require finding a common denominator before completing the equation? ***Select all that apply.***
    1. Adding fractions
    2. Subtracting fractions
    3. Multiplying fractions
    4. Dividing fractions
    5. Reducing reactions

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6. Which of the following is true regarding mixed fractions?
   1. The numerator is always greater than the denominator.
   2. The value is always less than one.
   3. It contains both a whole number and a fraction.
   4. It contains a decimal point.

7. A fraction represents parts of a whole and is written with a numerator on top and a _____ on bottom.

Calculate the following. If applicable, show your answer as a mixed fraction.

8. $2 + \frac{3}{4} =$ _____

9. $\frac{5}{9} + \frac{3}{9} =$ _____

10. $3\frac{3}{8} + \frac{1}{4} =$ _____

11. $\frac{4}{5} - \frac{3}{5} =$ _____

12. $\frac{9}{3} - \frac{1}{9} =$ _____

13. $\frac{7}{2} \times \frac{3}{14} =$ _____

14. $3\frac{4}{5} \times \frac{1}{3} =$ _____

15. $\frac{1}{4} \div \frac{1}{8} =$ _____

16. $\frac{7}{8} \div \frac{2}{3} =$ _____

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ANSWERS

Fractions

CHAPTER 2

1. When working with fractions, what is the term for the greatest common number that divides evenly into both the numerator and the denominator?
    1. Divisor
    2. Factor
    3. Dividend
    4. Product

    ANS: 2
    Rationale: The greatest common number, or factor, is one that divides evenly into both the numerator and the denominator.

2. When adding fractions with different denominators, the fractions must be changed to have a common denominator. What is the term for this change?
    1. Transforming
    2. Averaging
    3. Lowering
    4. Raising

    ANS: 4
    Rationale: Adding fractions with different denominators involve "raising" fractions to higher terms to have a common denominator.

3. Reducing a fraction to the lowest terms involves which of the following?
    1. Finding a factor that divides evenly into both the numerator and denominator
    2. Finding a common denominator for the fractions and adding the numerators
    3. Finding a common denominator for the fractions and subtracting the smaller fraction from the larger one
    4. Multiplying the numerators and denominators of the fractions

    ANS: 1
    Rationale: Reducing a fraction to the lowest terms involves finding a factor that divides evenly into both the numerator and denominator. (2) refers to adding fractions, (3) refers to subtracting fractions, and (4) refers to multiplying fractions.

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4. Which statements are true when discussing improper fractions? ***Select all that apply.***
   1. Numerators are greater than or equal to their denominators.
   2. Improper fractions contain both a whole number and a fraction.
   3. The value of an improper fraction is greater than or equal to one.
   4. Numerators are less than their denominators.
   5. Improper fractions contain a numerator and denominator that are both divisible by the number two.

   ANS: 1, 3
   Rationale: Improper fractions have numerators that are greater than or equal to their denominators. The value of an improper fraction is equal to or greater than one. Mixed fractions contain both a whole number and a fraction. Proper fractions have numerators that are less than their denominators. Divisibility by two does not affect whether a fraction is proper or improper.

5. Which of the following operations requires finding a common denominator before completing the equation? ***Select all that apply.***
   1. Adding fractions
   2. Subtracting fractions
   3. Multiplying fractions
   4. Dividing fractions
   5. Reducing reactions

   ANS: 1, 2
   Rationale: Adding fractions requires finding a common denominator for the fractions, adding the numerators, and then reducing the result to the lowest terms. Subtracting fractions requires finding a common denominator for the fractions, subtracting the smaller fraction from the larger one, and then reducing the result to the lowest terms. The other options do not require finding a common denominator.

6. Which of the following is true regarding mixed fractions?
   1. The numerator is always greater than the denominator.
   2. The value is always less than one.
   3. It contains both a whole number and a fraction.
   4. It contains a decimal point.

   ANS: 3
   Rationale: Mixed fractions contain both whole numbers and fractions. (1) refers to improper fractions, (2) refers to proper fractions, and (4) is incorrect.

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7. A fraction represents parts of a whole and is written with a numerator on top and a _____ on bottom.

ANS: denominator
Rationale: A fraction represents parts of a whole and is written with a numerator on top and a denominator on bottom.

8. $2 + \frac{3}{4} =$ _____

ANS: $2\frac{3}{4}$
Rationale: Convert 2 into a fraction with a common denominator by multiplying 2 × 4 = 8. Then add the numerators: $\frac{8}{4} + \frac{3}{4} = \frac{11}{4}$. To represent this as a mixed number, divide 11 ÷ 4 = 2, with 3 left over, or $2\frac{3}{4}$.

9. $\frac{5}{9} + \frac{3}{9} =$ _____

ANS: $\frac{8}{9}$
Rationale: Add the numerators: $\frac{5}{9} + \frac{3}{9} = \frac{8}{9}$.

10. $3\frac{3}{8} + \frac{1}{4} =$ _____

ANS: $3\frac{5}{8}$
Rationale: First, convert the mixed number into an improper fraction: $\frac{27}{8}$. Then find a common denominator for the second number: 8. So, the second number is converted to $\frac{2}{8}$. Add the numerators: $\frac{27}{8} + \frac{2}{8} = \frac{29}{8}$. To represent this as a mixed number, divide 29 ÷ 8 = 3 with 5 left over, or $3\frac{5}{8}$.

11. $\frac{4}{5} - \frac{3}{5} =$ _____

ANS: $\frac{1}{5}$
Rationale: Subtract the numerators: $\frac{4}{5} - \frac{3}{5} = \frac{1}{5}$.

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12. $\frac{9}{3} - \frac{1}{9}$ = _____

ANS: $2\frac{8}{9}$

Rationale: Find common denominator (9), make the conversion (3 × 9 = 27), and then subtract the fractions: $\frac{27}{9} - \frac{1}{9} = \frac{26}{9}$. To represent this as a mixed fraction, divide 26 ÷ 9 = 2, with 8 left over, or $2\frac{8}{9}$.

13. $\frac{7}{2} \times \frac{3}{14}$ = _____

ANS: $\frac{3}{4}$

Rationale: Multiply the numerators and denominators: $\frac{7 \times 3}{2 \times 14} = \frac{21}{28}$. Reduce to $\frac{3}{4}$.

14. $3\frac{4}{5} \times \frac{1}{3}$ = _____

ANS: $1\frac{4}{15}$

Rationale: Convert $3\frac{4}{5}$ to an improper fraction $\frac{19}{5}$. Multiply the numerators and the denominators: $\frac{19 \times 1}{5 \times 3} = \frac{19}{15}$. To represent this as a mixed number, divide 19 ÷ 15 = 1, with 4 left over, or $1\frac{4}{15}$.

15. $\frac{1}{4} \div \frac{1}{8}$ = _____

ANS: 2

Rationale: First, find the reciprocal of the second fraction by flipping the numerator and denominator: $\frac{8}{1}$. Then multiply the numerators and denominators of the first fraction and the reciprocal of the second fraction: $\frac{1 \times 8}{4 \times 1} = \frac{8}{4}$. Reduce the resulting fraction to 2.

16. $\frac{7}{8} \div \frac{2}{3}$ = _____

ANS: $1\frac{5}{16}$

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Rationale: First, find the reciprocal of the second fraction by flipping the numerator and denominator: $\frac{3}{2}$. Then multiply the numerators and denominators of the first fraction and the reciprocal of the second fraction: $\frac{7 \times 3}{8 \times 2} = \frac{21}{16}$. To represent this as a mixed fraction, divide 21 ÷ 16 = 1, with 5 left over, or 1 $\frac{5}{16}$.

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