Chapter 3 Review/Test

Concepts and Skills

Simplify each expression.

1. \(1.4w - 0.6w\)
2. \(\frac{3}{4}m + \frac{4}{5}m - \frac{31}{20}m\)
3. \(\frac{1}{8}y + \frac{1}{2}y + \frac{1}{3}y\)
4. \(1.8m - 0.2m - 7m\)
5. \(1.3a - 0.8b + 2.2b - a\)
6. \(1 + \frac{1}{5}a + \frac{3}{5}b + \frac{4}{5}a\)
Expand each expression. Then simplify when you can.

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<thead>
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<tbody>
<tr>
<td>7</td>
<td>$1.2(2p - 3)$</td>
<td></td>
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<tr>
<td>9</td>
<td>$\frac{1}{3}(\frac{t}{3} + \frac{1}{2})$</td>
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<tr>
<td>12</td>
<td>$-\frac{2}{3}(6x + 3)$</td>
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<tr>
<td>13</td>
<td>$3(a + 3) + 2a$</td>
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<td>15</td>
<td>$2.5(m - 2) + 5.6m$</td>
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<tr>
<td>8</td>
<td>$\frac{1}{3}(12p + 9q)$</td>
<td>$4p + 3q$</td>
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<tr>
<td>10</td>
<td>$-4(-2q + 2.5)$</td>
<td>$8q - 10$</td>
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<tr>
<td>12</td>
<td>$-0.5(2m - 4n)$</td>
<td>$2n - m$</td>
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<tr>
<td>14</td>
<td>$4(2p - 3) - 3(p + 2)$</td>
<td>$5p - 18$</td>
</tr>
<tr>
<td>16</td>
<td>$4(0.6n - 3) - 0.2(2n - 3)$</td>
<td>$2n - 11.4$</td>
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- $8p - 12 - 3p - 6$
- $oxed{2n - m} \Rightarrow -m + an$
- $\boxed{m - 2an}$

- dist. a. negative!
Factor each expression.

17. \(4t - 20s\)
18. \(-6p - 21q\)
19. \(-8i + 12 + 4j\)

20. \(6a + 10b - 20\)
18. \(-3(2p + 7q)\)
19. \(-15x - 6 - 12y\)

21. \(-9m - 3n - 6\)
20. \(-3(3a + 5b - 10)\)
19. \(-3(5x + 2 + 4y)\)

*factor a negative when all terms are negative.*
Translate each verbal description into an algebraic expression. Then simplify when you can.

23. One-fourth \( x \) less than the sum of 7 and 2\( x \).

24. 4 times 5\( y \) divided by 18.

25. Five-ninths of \((3p + 1)\) subtracted from one-third of \((q + p)\).

Problem Solving

Solve. Show your work.

26. After 14 boys leave a concert, the ratio of boys to girls is 3 : 10. If there are \( p \) girls at the concert, write an algebraic expression for the number of boys at the beginning of the concert in terms of \( p \).

\[
\frac{p}{14} = \frac{3p + 14}{10} \quad \text{boys}
\]

\[
\frac{p}{14} = \frac{3p + 14}{10} \quad \text{boys}
\]

\[
\frac{3p + 14}{10} \quad \text{boys}
\]

\[
\frac{3p}{10} + 14 \quad \text{boys}
\]
27. 40 percent of the fish in a pond are goldfish and the rest are Koi. The number of goldfish is $g$. The farmer then increases the number of Koi by 10 percent. How many Koi are there in the pond, in terms of $g$, now?

28. Three-fourths of the weight of a bunch of grapes is equivalent to three-fifths of the weight of a papaya. If the grapes weigh $(x + 28)$ pounds, what is the weight of a papaya in terms of $x$?

\[
\left(\frac{5}{4}x + 35\right) \text{ lb}
\]
29. Sally ordered some pizzas to be delivered. The bill for the pizza was $m$ dollars. Sally tipped the deliverer 15% of the bill.

   a) Write an expression for the total amount of money Sally paid.
   b) The bill for the pizza was $30. Find the amount of money Sally paid.

30. A box contains $n$ quarters and some dimes. The ratio of quarters to dimes is 1:2.

   a) Write an expression for the total amount of money in the box. $0.45n$ dollars
   b) If there are 12 quarters, find the total amount of money in the box. $5.40$

\[ \frac{n}{n} \frac{2n}{2n} \]

\[ Q \quad D \]

\[ \frac{a5n}{(45n)} + \frac{.10(2n)}{.10(2n)} = \frac{45n}{45n} \]
The admission fee to a museum is $12.50 per nonsenior adult, $8 per child, and $6.50 per senior citizen. A tour group consists of \( m \) nonsenior adults, \( \left( \frac{5}{4} m + 6 \right) \) children, and \( 8n \) senior citizens.

a) What is the total admission fee of the group? \((22.5m + 48 + 52n)\) dollars

b) Write an expression for the admission fees of the children in the group subtracted from the combined admission fees of the nonsenior adults and senior citizens in the group. \((2.5m + 52n - 48)\) dollars

c) Evaluate your expression from b), when \( m = 24 \) and \( n = 4 \). $220