### RATIOS & PROPORTIONS WITH APPLICATIONS

Determine whether each pair of ratios is proportional. **SHOW ALL OF YOUR WORK.**

<table>
<thead>
<tr>
<th>1. YES or NO</th>
<th>7 and 15 [ \frac{14}{30} ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. YES or NO</td>
<td>55 and 33 [ \frac{65}{44} ]</td>
</tr>
</tbody>
</table>

Solve for ‘x’ in each proportion. **SHOW ALL OF YOUR WORK.**

<table>
<thead>
<tr>
<th>3. ( x = )</th>
<th>( x = \frac{22}{33} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. ( x = )</td>
<td>( x = \frac{x+4}{30} )</td>
</tr>
<tr>
<td>5. ( x = )</td>
<td>( \frac{3}{x-1} = \frac{12}{3x+1} )</td>
</tr>
</tbody>
</table>

Set up a proportion for each of the following and solve. **WORDS FIRST!**

<table>
<thead>
<tr>
<th>6. Words:</th>
<th>The ratio of mystery books to fiction books is 2 to 3. If there are 12 mystery books, how many fiction books are there?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer:</td>
<td></td>
</tr>
<tr>
<td>7. Words:</td>
<td>A sailor is allowed 7 days off for every 30 days at sea. For 28 days off, how many days at sea must a sailor spend?</td>
</tr>
<tr>
<td>Answer:</td>
<td></td>
</tr>
<tr>
<td>8. Words:</td>
<td>Two out of every 3 students in Mr. Pearson’s ninth grade class recycle aluminum cans. If 48 students recycle aluminum cans, how many students are in Mr. Pearson’s class?</td>
</tr>
<tr>
<td>Answer:</td>
<td></td>
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</table>
Cindy’s job is to check computer printers for defects. Out of 420 printers she has to check, only 3 of the first 84 have been defective. Using this information, what is the best prediction of the total number of printers in this group that will be defective?

A recipe for 2 1/2 dozen whole-wheat muffins requires 600 g of flour. How many dozens of muffins can be made with 900 g of flour?

A car that sold for $11,900 has a sales tax of $767. How much, to the nearest dollar, does a car cost if its sales tax is $637?

Find AB in simplest form, if A(-3, 4) and B(4, 7).

Find the measure of an angle, if its complement is 43°.

Which of the following ratios is proportional to 6/13?

A. \( \frac{30}{52} \)    B. \( \frac{14}{25} \)    C. \( \frac{42}{91} \)    D. \( \frac{27}{65} \)
15. If \( \frac{a}{b} \) is proportional to \( \frac{c}{d} \), which of the following is **not** necessarily true?

A. \( ad = bc \)

B. \( \frac{a}{c} = \frac{b}{d} \)

C. \( ab = cd \)

D. Not Here

16. What is the value of ‘x’ in the following proportion?

\[
\frac{x + 1}{5} = \frac{2x - 3}{9}
\]

Record your answer and fill in the bubbles on the grid below. Be sure to use the correct place value.

17. Which statement is true about the equations \( y_1 = \frac{1}{4}x + 2 \) and

\[ y_2 = -\frac{1}{2}x + 3 \]?

A. They both intersect the y-axis at the same point.

B. \( y_1 \) is steeper than \( y_2 \).

C. They both slant to the left.

D. Not Here

18. Which change to the line \( y = -2x - 1 \) will result in the equation of the line shown in the graph?

A. Increase \( b \) by 2

B. Increase \( m \) by 2

C. Increase \( m \) by 3

D. Not Here

19. A Key Club supporter is donating $5 for every strike that Jodie bowls in 10 attempts. The graph represents the relationship between the number of strikes and the total amount donated. How would the graph change if the supporter donated $10 per strike, plus an additional $50?

A. The slope would be less steep.

B. The y-intercept would be 10.

C. \( m = 50 \)

D. Not Here