Tasks

Directions: For each task, choose the grade where the task best fits. Explain your reasoning.

**Task A: Fractions and Rectangles**

What fraction of the rectangle below is shaded?

![Rectangle](image)

Laura says that $\frac{1}{4}$ of the rectangle is shaded. Do you think she is correct?

Explain why or why not by using the picture.

Source: illustrativemathematics.org/illustrations

**Task B: Volume and the Associative Property of Multiplication**

Use snap cubes to build a rectangular prism that is 2 cubes on one side, 3 cubes on another, and 5 cubes on the third side.

• Explain how you can see that the rectangular prism is being made of 2 groups with 15 cubes in each.
• Explain how you can also see the rectangular prism is being made of 6 groups with 5 cubes in each.
• Does it matter which numbers you multiply first when you want to find the volume of a rectangular prism?

Source: adapted from illustrativemathematics.org/illustrations

**Task C: Naming the Whole for a Fraction**

Mrs. Francis drew a picture on the board.

Then she asked her students what fraction it represents.

• Emily said that the picture represents $\frac{2}{6}$. Label the picture to show how Emily's answer can be correct.
• Raj said that the picture represents $\frac{2}{3}$. Label the picture to show how Raj’s answer can be correct.
• Alejandra said that the picture represents 2. Label the picture to show how Alejandra’s answer can be correct.

Source: illustrativemathematics.org/illustrations
### Task D: Jog-A-Thon

Alex is training for his school’s Jog-A-Thon and needs to run at least 1 mile per day. If Alex runs to his grandma’s house, which is $\frac{5}{8}$ of a mile away, and then to his friend Justin’s house, which is $\frac{1}{2}$ of a mile away, will he have trained enough for the day?

### Task E: Gifts from Grandma, Var. 1

1. Juanita spent $9$ on each of her $6$ grandchildren at the fair. How much money did she spend?
2. Nita bought some games for her grandchildren for $8$ each. If she spent a total of $48$, how many games did Nita buy?
3. Helen spent an equal amount of money on each of her $7$ grandchildren at the fair. If she spent a total of $42$, how much did each grandchild get?

### Task F: Comparing Money Raised

1. Helen raised $12$ for the food bank last year and she raised $6$ times as much money this year. How much money did she raise this year?
2. Sandra raised $15$ for the PTA and Nita raised $45$. How many times as much money did Nita raise as compared to Sandra?
3. Luis raised $45$ for the animal shelter, which was $3$ times as much money as Anthony raised. How much money did Anthony raise?

### Task G: Fruit Salad

A fruit salad consists of blueberries, raspberries, grapes, and cherries. The fruit salad has a total of $280$ pieces of fruit. There are twice as many raspberries as blueberries, three times as many grapes as cherries, and four times as many cherries as raspberries.

How many cherries are there in the fruit salad?

Source: illustrativemathematics.org/illustrations
**Tasks**

**Task H: Relating Situations to Equations**

Which of the following could be modeled by $y=2x+5$? Answer YES or NO for each question.

1. Joaquin earns $2.00 for each magazine sale. Each time he sells a magazine he also gets a five-dollar tip. How much money will he earn after selling $x$ magazines?
   YES NO

2. Sandy charges $2.00 an hour for babysitting. Parents are charged $5.00 if they arrive home later than scheduled. Assuming the parents arrived late, how much money does she earn for $x$ hours?
   YES NO

3. Sneak Preview is a members-only video rental store. There is a $2.00 initiation fee and a $5.00 per video rental fee. How much would John owe on his first visit if he becomes a member and rents $x$ videos?
   YES NO

4. Andy is saving money for a new CD player. He began saving with a $5.00 gift and will continue to save $2.00 each week. How much money will he have saved at the end of $x$ weeks?
   YES NO

Source: adapted from illustrativemathematics.org/illustrations

**Task I: Art Class, Var. 1**

The students in Ms. Baca’s art class were mixing yellow and blue paint. She told them that two mixtures will be the same shade of green if the blue and yellow paint are in the same ratio.

The table below shows the different mixtures of paint that the students made.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Blue</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

1. How many different shades of paint did the students make?

2. Some of the shades of paint were bluer than others. Which mixture(s) were the bluest?

3. Carefully plot a point for each mixture on a coordinate plane. (Graph paper might help.)

4. Draw a line connecting each point to $(0,0)$. What do the mixtures that are the same shade of green have in common?

Source: adapted from illustrativemathematics.org/illustrations
Task J: Battery Charging

Sam wants to take his MP3 player and his video game player on a car trip. An hour before they plan to leave, he realized that he forgot to charge the batteries last night. At that point, he plugged in both devices so that they can charge as long as possible before they leave.

Sam knows that his MP3 player has 40% of its battery life left and that the battery charges by an additional 12 percentage points every 15 minutes. His video game player is new, so Sam doesn’t know how fast it is charging but he recorded the battery charge for the first 30 minutes after he plugged it in.

<table>
<thead>
<tr>
<th>time charging (minutes)</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>video game player battery charge (%)</td>
<td>20</td>
<td>32</td>
<td>44</td>
<td>56</td>
</tr>
</tbody>
</table>

1. If Sam’s family leaves as planned, what percent of the battery will be charged for each of the two devices when they leave?
2. How much time would Sam need to charge the battery 100% on both devices?

Source: illustrativemathematics.org/illustrations

Task K: Mixing Concrete

The table below shows the combination of dry prepackaged mix and water to make concrete. The mix says for every 1 gallon of water stir 60 pounds of dry mix. We know that 1 gallon of water weighs 8 pounds. Using the information provided in the table, complete the remaining parts of the table.

<table>
<thead>
<tr>
<th>Dry Mix (pounds)</th>
<th>Water (pounds)</th>
<th>Total (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>10</td>
<td>14 ( \frac{1}{6} )</td>
</tr>
<tr>
<td>( 2 \frac{1}{2} )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: engageny