6-8

Skills Practice

Scale Drawings

ARCHITECTURE The scale on a set of architectural drawings for a house is $\frac{1}{2}$ inch = $1\frac{1}{2}$ feet. Find the length of each part of the house.

<table>
<thead>
<tr>
<th>Room</th>
<th>Drawing Length</th>
<th>Actual Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Living Room</td>
<td>5 inches</td>
<td></td>
</tr>
<tr>
<td>2. Dining Room</td>
<td>4 inches</td>
<td></td>
</tr>
<tr>
<td>3. Kitchen</td>
<td>5$\frac{1}{2}$ inches</td>
<td></td>
</tr>
<tr>
<td>4. Laundry Room</td>
<td>3$\frac{3}{4}$ inches</td>
<td></td>
</tr>
<tr>
<td>5. Basement</td>
<td>10 inches</td>
<td></td>
</tr>
<tr>
<td>6. Garage</td>
<td>8$\frac{1}{3}$ inches</td>
<td></td>
</tr>
</tbody>
</table>

ARCHITECTURE As part of a city building refurbishment project, architects have constructed a scale model of several city buildings to present to the city commission for approval. The scale of the model is 1 inch = 9 feet.

7. The courthouse is the tallest building in the city. If it is $7\frac{1}{2}$ inches tall in the model, how tall is the actual building?

8. The city commission would like to install new flagpoles that are each 45 feet tall. How tall are the flagpoles in the model?

9. In the model, two of the flagpoles are 4 inches apart. How far apart will they be when they are installed?

10. The model includes a new park in the center of the city. If the dimensions of the park in the model are 9 inches by 17 inches, what are the actual dimensions of the park?

11. Find the scale factor.
Practice

Scale Drawings

For Exercises 1–3, use the diagram of a section of the art museum shown. Use a ruler to measure.

1. What is the actual length of the Impressionism Art room?

2. Find the actual dimensions of the Baroque Art room.

3. Find the scale factor for this blueprint.

Find the length of each model on the scale drawing with the given scale.

4. [Diagram of a train with a scale of 1 inch = 8 ft]

5. [Diagram of an arch with a scale of 1 cm = 4 meters]

6. [Diagram of an alligator with a scale of 2 in = 1.5 ft]

7. **SKYSCRAPER** A model of a skyscraper is made using a scale of 1 inch:75 feet. What is the height of the actual building if the height of the model is 19\(\frac{2}{5}\) inches?

8. **GEOGRAPHY** Salem and Eugene, Oregon, are 64 miles apart. If the distance on the map is 3\(\frac{1}{4}\) inches, find the scale of the map.

9. **PYRAMIDS** The length of a side of the Great Pyramid of Khufu at Giza, Egypt, is 751 feet. If you were to make a model of the pyramid to display on your desk, which would be an appropriate scale: 1 in. = 10 ft or 1 ft = 500 ft? Explain your reasoning.
### Word Problem Practice

#### Scale Drawings

1. **CARS** A scale drawing of an automobile has a scale of $1 \text{ inch} = \frac{1}{2} \text{ foot}$. The actual width of the car is 8 feet. What is the width on the scale drawing?

2. **MODELS** A model ship is built to a scale of $1 \text{ centimeter} : 5 \text{ meters}$. The length of the model is 30 centimeters. What is the length of the actual ship?

3. **BUILDING** Jose wants to build a model of a 180-meter tall building. He will be using a scale of $1.5 \text{ centimeters} = 3.5 \text{ meters}$. How tall will the model be? Round your answer to the nearest tenth.

4. **TRAVEL** Susan is driving to Mount Shasta. On her map, she is a distance of $7\frac{3}{4} \text{ inches}$ away. The scale of the map is $\frac{1}{2} \text{ inch} = 50 \text{ miles}$. How far must Susan travel to reach her destination?

5. **MAPS** A map of Levi’s property is being made with a scale of $2 \text{ centimeters} : 3 \text{ meters}$. What is the scale factor?

6. **LANDSCAPING** A pond is being dug according to plans that have a scale of $1 \text{ inch} = 6.5 \text{ feet}$. The maximum distance across the pond is 9.75 inches on the plans. What will be the actual maximum distance across the pond?
Scale Drawings

Use the scale drawings of two different apartments to answer the questions.

1. Which apartment has the greater area?

2. What is the difference in square feet between Apartment A and Apartment B?

3. How much more closet space is offered by Apartment B than Apartment A?

4. How much more bathroom space is offered by Apartment A than Apartment B?

5. A one-year lease for Apartment A costs $450 per month. A one-year lease for Apartment B costs $525 per month. Which apartment offers the greatest value in terms of the cost per square foot?
6-9
Skills Practice
Fractions, Decimals, and Percents

Write each percent as a fraction in simplest form.

1. 18%  
2. 67.5%  
3. 21.25%

4. 87.5%  
5. 31\(\frac{1}{4}\)%  
6. 17.5%

7. 15\(\frac{3}{4}\)%  
8. 68\(\frac{3}{4}\)%  
9. 7.5%

10. 130%  
11. 0.5%  
12. 0.02%

Write each fraction as a percent. Round to the nearest hundredth if necessary.

13. \(\frac{3}{5}\)  
14. \(\frac{3}{8}\)  
15. \(\frac{2}{18}\)

16. \(\frac{3}{16}\)  
17. \(\frac{7}{9}\)  
18. \(\frac{21}{50}\)

19. \(\frac{1}{3}\)  
20. \(\frac{40}{42}\)  
21. \(\frac{7}{16}\)

22. \(\frac{17}{10}\)  
23. \(\frac{1}{500}\)  
24. \(\frac{26}{25}\)
Practice

Fractions, Decimals, and Percents

Write each percent as a fraction in simplest form.

1. 37.5%  
2. 5.8%  
3. 43.75%  
4. 52.5%

5. $\frac{831}{3}%$  
6. $66\frac{2}{3}%$  
7. 135%

Write each fraction as a percent. Round to the nearest hundredth if necessary.

9. $\frac{13}{20}$  
10. $\frac{9}{25}$  
11. $\frac{7}{8}$  
12. $\frac{39}{40}$

13. $\frac{5}{9}$  
14. $\frac{6}{7}$  
15. $\frac{2}{1}$  
16. $\frac{1}{1000}$

Replace each • with $>$, $<$ or $=$ to make a true statement.

17. $\frac{3}{16}$ • 24%  
18. 0.775 • $\frac{31}{40}$  
19. 16% • 0.016

Order each set of numbers from least to greatest.

20. 0.6, 23%, 0.07, $\frac{2}{3}$  
21. $\frac{4}{5}$%, 0.37, $\frac{1}{4}$, 0.4

22. SAVINGS Kayla has 14.5% of her salary placed into an Individual Retirement Account. What fraction is this?

23. INTERNET At home, 2 out of 5 people have access to broadband technology. What percent is this?

24. SPORTS A golfer made par on 13 of 18 holes. To the nearest tenth, on what percent of the holes did he make par?

ANALYZE TABLES For Exercises 25 and 26, use the table that shows the percent of households with the listed appliance.

25. What fraction of households have a clothes dryer?

26. Approximately 34 out of 67 households have a coffeemaker. Is this greater or less than the percent of households with a dishwasher? Explain.

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Percent of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerator</td>
<td>99.3%</td>
</tr>
<tr>
<td>Washing Machine</td>
<td>82.0%</td>
</tr>
<tr>
<td>Dryer</td>
<td>77.8%</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>56.0%</td>
</tr>
</tbody>
</table>
INTERNET For Exercises 1–4, use the table. It shows the percents of online shopping purchases made by all Internet users and the percents made by Internet users over age 55.

<table>
<thead>
<tr>
<th>Most Popular Online Purchases</th>
<th>Internet Users Over 55</th>
<th>All Internet Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>computer software</td>
<td>43%</td>
<td>19%</td>
</tr>
<tr>
<td>books</td>
<td>43%</td>
<td>21%</td>
</tr>
<tr>
<td>computer hardware</td>
<td>24%</td>
<td>13%</td>
</tr>
<tr>
<td>music CDs</td>
<td>29%</td>
<td>22%</td>
</tr>
<tr>
<td>clothing</td>
<td>19%</td>
<td>8%</td>
</tr>
</tbody>
</table>

1. What fraction of Internet users over 55 bought clothing online?

2. What fraction of all Internet users bought clothing online?

3. What fraction of all Internet users bought music CDs online?

4. Is the fraction of Internet users over 55 who bought books online greater or less than \(\frac{22}{50}\)? Explain.

5. FOOTBALL In 2005, Indianapolis quarterback Peyton Manning completed 305 out of 453 passes. What was his pass completion percentage to the nearest tenth?

6. COMPUTERS In Joan’s math class, there are 20 computers and 32 students. What percent of students will be able to use a computer without sharing?

7. VEHICLES In the town of Orick, 5 out of 13 vehicles are trucks. What percent of the vehicles are trucks? Round to the nearest tenth.

8. DENTISTRY Dana has fillings in 4 of her 32 teeth. What percent of her teeth have fillings?
Shaded Regions

The fractions or percents listed below each represent one of the shaded regions.

Match each fraction or percent with the shaded region it represents.

1. \( \frac{1}{2} \)  
   a.  
   b.  
   c.  

2. \( \frac{25}{64} \)  

3. \( \frac{11}{16} \)  

4. 25%  
   d.  
   e.  
   f.  

5. \( \frac{3}{4} \)  

6. 62\( \frac{1}{2} \)%  

7. \( \frac{29}{64} \)  
   g.  
   h.  
   i.  

8. 37.5%  

9. \( \frac{7}{16} \)