

# Unit 4 Test Study Guide

## (Ratio, Proportion, & Percent)

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Per: \_\_\_\_\_

### Topic 1: Ratio & Rates

<b>Use for questions 1-3: An aquarium has 14 angelfish, 12 clownfish and 18 seahorses in one exhibit. What each ratio in simplest form.</b>		
1. angelfish to seahorses	2. clownfish to angelfish and seahorses.	3. seahorses to the total number of fish in the exhibit.
<b>Write each ratio in simplest form.</b>		
4. 3 cups of sugar to 27 cups of milk	5. 6 bowls of cereal to 20 pancakes	6. 85 pieces of candy to 10 bags
7. 22 forks to 30 spoons	8. 152 cherries to 16 jars	9. 3.5 yards of fabric for 5 scarves
<b>Calculate each unit rate. Round the nearest tenth or cent when necessary.</b>		
10. After running 5 miles, Kevin's total time was 42 minutes. Find his time per mile.	11. Nellie purchased 6.5 pounds of strawberries for \$12.87. Calculate the cost of a single pound.	
<b>Determine if Option A or Option B is the better deal. Justify your answer.</b>		
12. <input type="checkbox"/> <b>Option A:</b> 6 granola bars for \$6.48 <input type="checkbox"/> <b>Option B:</b> 5 granola bars for \$5.50	13. <input type="checkbox"/> <b>Option A:</b> 16 oz. of jelly for \$3.30 <input type="checkbox"/> <b>Option B:</b> 48 oz. of jelly for \$8.64	

### Topic 2: Proportional Relationships & Solving Proportions

<b>Determine if a proportional relationship exists. If yes, give the constant rate.</b>																						
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<b>Determine if the ratios form a proportion.</b>																						
16. $\frac{4}{10}, \frac{32}{72}$	17. $\frac{40}{25}, \frac{32}{20}$																					

Solve the proportion.											
18. $\frac{15}{45} = \frac{9}{c}$	19. $\frac{16}{120} = \frac{v}{15}$										
20. Erin is making lemonade. She needs $1\frac{3}{4}$ cups of white sugar to make 8 cups of lemonade. She has a 32 cup pitcher to fill. How many cups of sugar will she need?	21. Morgan pays \$1.25 per soda for each of her friends. Complete the table given this proportional relationship. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Sodas</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td>3</td> <td></td> </tr> <tr> <td>4</td> <td></td> </tr> </tbody> </table>	Sodas	Total Cost	1		2		3		4	
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### Topic 3: Scale Drawings & Models

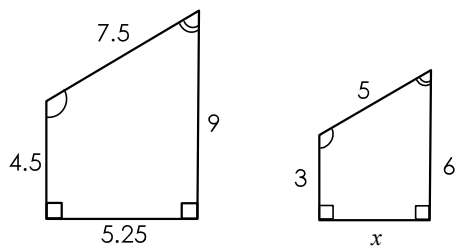
22. On a map with a scale of 0.25 inch = 30 miles, the distance between two cities is 8.3 inches. Find the actual distance between the cities.	23. A model of a skyscraper uses the scale of 2 inches = 45 feet. If the actual skyscraper is 992 feet tall, how tall is the model?
24. Morgan and Natalie's heights can be compared using a scale of 1.5 inch : 2.5 inches. If Morgan is 36 inches tall, find Natalie's height. Give your answer in feet.	25. Carl is remodeling his kitchen. On his plans, the kitchen island is 4 inches long. If the actual kitchen island will be 9.2 feet long, what was the scale used to create the drawing?

### Topic 4: Similar Figures & Indirect Measure

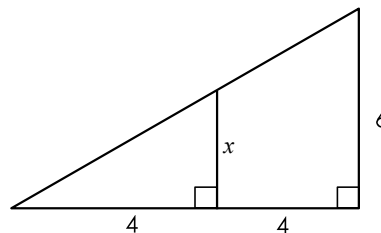
<p>Use the similar figures below for questions 26-27.</p>	26. Give the scale factor of Figure A to Figure B.
	27. Give the scale factor of Figure B to Figure A.

If the figures below are similar, find the value of  $x$ .

28.



29.

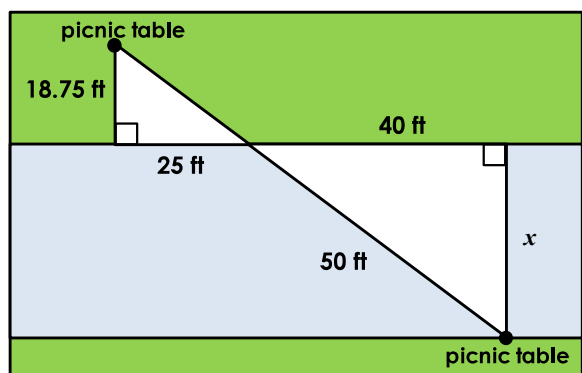


Use the given information to find each measure. Round to the nearest hundredth if necessary.

30. A palm tree casts a 19 foot shadow. A beach umbrella in the sand next to the palm tree casts a 6.5 foot shadow. If the umbrella is 4 feet tall, calculate the height of the palm tree.

31. A telephone pole is 45 feet tall and casts a 20 foot shadow. A street lamp next to the telephone pole casts a 12 foot shadow. Calculate the height of the street lamp.

Use the diagram of the park below to answer questions 32-33.



32. Find the length of the bridge ( $x$ ) across the water.

33. There are two picnic tables in the park, one on each side of the river. Find the distance between the two picnic tables.

### Topic 5: Percents

Round to the nearest hundredth if necessary.

34. Find 15% of 30.

35. What is 65% of 175?

36. 150 is what percent of 250?

37. 115.6 is what percent of 340?

38. 28 is 40% of what number?

39. 31.85 is 24.5% of what number?

<p><b>40.</b> Andrew took a math test with 40 questions. If he scored an 85%, how many questions did he get correct?</p>	<p><b>41.</b> 56 students in a gymnastics club participated in the last fundraiser. How many students are in the gymnastics club altogether if the number of students who participated is 80% of the total number of students in the club.</p>
<p><b>42.</b> A box of diapers is marked down 10%. How much are the diapers if they originally cost \$28.75?</p>	<p><b>43.</b> A certain laptop is really popular and sells for \$199.99. Since sales are so good, the store raises the price by 13%. What is the cost of the laptop after the markup?</p>
<p><b>44.</b> An \$80 printer is selling for 37.5% off. Find the final price of the printer if sales tax is 5.5%.</p>	<p><b>45.</b> Beth is buying a new washing machine that costs \$450. She has a 15% off coupon and must pay 6% sales tax. How much will Beth pay for the washing machine?</p>
<p><b>46.</b> Nina buys a \$59.99 video game on sale for 15% off. She then uses a coupon that takes 20% off the sale price. If sales tax is 7%, how much did she pay in total?</p>	<p><b>47.</b> David works for the postal service. Last week he drove a total of 350 miles delivering mail and this week he drove a total of 415 miles. What is the percent change in the number of miles driven? Classify as a percent increase or decrease.</p>

<p><b>48.</b> The James family purchased their home in 2000 for \$175,000. They sold their home in 2017 for \$250,000. Find the percent change in the value of their home. Classify as a percent increase or decrease.</p>	<p><b>49.</b> Rachel owns a cupcake shop. Last week she used 42.5 pounds of sugar making cupakes. This week she used 26 pounds of sugar. Find the percent change in the amount of sugar used. Classify as a percent increase or decrease.</p>
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**Topic 6: Simple Interest**

<p><b>Solve each problem. Round to the nearest tenth or cent when necessary.</b></p>	
<p><b>50.</b> Simon put \$15,000 in an account with a simple interest rate of 4.5%. Calculate the amount of interest earned at the end of 8 years.</p>	<p><b>51.</b> Tyler borrowed \$42,000 from the bank to open up a skateboard shop. If he had a simple interest rate of 5%, how much will he have paid to the bank in total once he paid the loan back in full after 15 years?</p>
<p><b>52.</b> Chelsey put \$450 into an account with a simple interest rate of 2.5%. When she withdrew the money she had earned a total of \$67.50 in interest. How long did she leave the money in the account?</p>	<p><b>53.</b> Marcus borrowed \$9,000 from his bank to buy a car. The bank charged him a simple interest rate of 1.25%. By the time he paid back the money, he had paid a total of \$9,281.25. How long did it take Marcus to pay back the money?</p>
<p><b>54.</b> What was the simple interest rate on a \$8,000 investment that was left in an account for 18 months and earned \$360 in interest?</p>	<p><b>55.</b> Vince took out a \$500 loan to buy a new couch. He paid back the loan in 2 years and paid a total of \$570. What was the simple interest rate for his loan?</p>