

MATH 7: Week of May 4

- Go through the slides (notes) and work through the examples on a separate piece of paper.
- Do the given practice problems (again, on a separate piece of paper).
- Check your answers with the key given (last slide).
- Take a photo or scan in your work and submit it in Google Classroom. If you have questions or would like feedback on your work, add that as a comment with your submitted work. **Note – you can always take a picture with a smart phone and email it to yourself, then attach it to Google Classroom.*
- The other option for turn in is to send it in on Monday when the new packet is available.
- Zoom help session invites will be sent to your school email address and/or posted on Google Classroom.

Day 1: Slides 2-5

Day 2: Slides 6-9

Day 3: Slides 10-13

Day 4: Slides 14-16

Answers on Slide 17

Day 1 L9: Proportions and Similar Figures

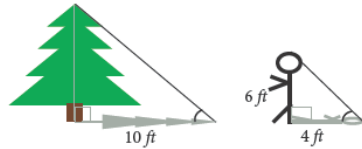
Target: Use proportions to solve problems involving similar figures.

Finding Missing Sides in Two Similar Figures

1. Write a ratio for one pair of corresponding sides using numbers.
2. Write a ratio for another pair of corresponding sides using a number and a variable for the missing side.
3. Write a proportion using the ratios of corresponding sides.
4. Solve the proportion.

Example 1

Find the height of the tree in Steven's yard based on the drawing.



$$\frac{\text{tree's shadow}}{\text{Steven's shadow}} = \frac{\text{tree's height}}{\text{Steven's height}}$$

$$\frac{10}{4} = \frac{x}{6}$$

- Set up the proportion.
- Let x = the height of the tree.
- Solve the proportion.
- The tree is 15 feet tall.

$$\frac{10 \cdot 6}{4} \quad x = 15$$

Example 2



The parallelograms are similar. Find y .

$$\frac{6}{9} = \frac{8}{y}$$

- Write a proportion using corresponding sides.
- Solve the proportion. $\frac{9 \cdot 8}{6} \quad y = 12$
- The missing length is 12 inches.

Day 1 L9 Practice Problems

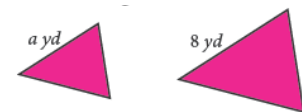
The shapes below are similar. Use proportions to solve for each variable.

1. 2.
3. 4.

End Day 1

Day 2

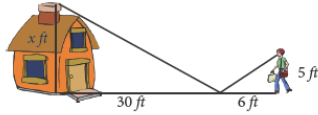
Example 3



The similar triangles have a scale factor of 3:5. Find a .

- Scale factor is the ratio of the sides. $\frac{3}{5} = \frac{a}{8}$
Set up a proportion.
- Solve the proportion. $\frac{3 \cdot 8}{5} \quad a = 4.8$
- The missing length is 4.8 yards.

Example 4



Shannon wanted to measure the height of her house to the tip of its chimney using a mirror. Use the diagram above to find the height of Shannon's house.

- Set up a proportion using corresponding sides.

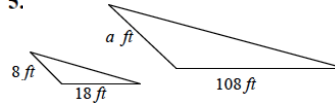
$$\frac{x}{5} = \frac{30}{6}$$

- Solve the proportion. $\frac{5 \cdot 30}{6} \quad x = 25$
- Shannon's house is 25 feet high.

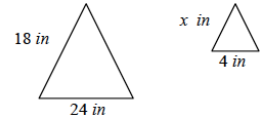
Day 2: L9 Practice Problems

The shapes below are similar. Use proportions to solve for each variable.

5.

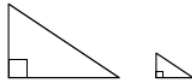


6.

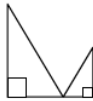


Day 2: L9 Practice Problems

7. Mike wanted to find the height of his pole barn. He measured the shadow from the pole barn on the ground to be 40 feet. He measured his own shadow on the ground to be 12 feet. Mike is 6 feet tall. Find the height of the pole barn.



8. Paula used a mirror to find the height of a tree in her backyard. She found her eye height to be 5.5 feet and her distance to the mirror to be 1.1 feet. The mirror was 12 feet from the tree. Find the height of the tree.



End Day 2

Day 3

L11: Scale Drawings

Target: Use scales for maps, blueprints, and models to find missing measurements.

Scale drawings are used in a variety of ways. Architects make blueprints of buildings to help determine the layout of the building as well as the cost to construct the building. You can estimate the length of a trip by using the scale on a map. Some people enjoy making models of cars and airplanes which look exactly like the actual car or airplane they are imitating.

Drawing to scale is like looking at similar figures. All corresponding angles must be equal and the measures of all corresponding lengths must be proportional.



Example 1a

Alan's map has a scale of 2 inches : 5 miles.

The distance on the map from Mt. Hood Meadows to Alan's home is 16 inches. What is the actual distance?

- Write a proportion. $\frac{2 \text{ inches}}{5 \text{ miles}} = \frac{16 \text{ inches}}{x \text{ miles}}$
- Solve the proportion. $\frac{5 \cdot 16}{2} \quad x = 40$
- The actual distance is 40 miles.

Example 1b

Alan's map has a scale of 2 inches : 5 miles.

The actual distance from Alan's home to Portland is 25 miles. Find the distance on the map.

- Write a proportion. $\frac{2 \text{ inches}}{5 \text{ miles}} = \frac{x \text{ inches}}{25 \text{ miles}}$
- Solve the proportion. $\frac{2 \cdot 25}{5} \quad x = 10$
- The distance to Portland on the map is 10 inches.

Day 3: L11 Practice Problems

Use a proportion for each problem.

A map has a scale 1 inches : 10 miles. Use the given map distance to find the actual distance.

1. 3 in 2. 7.5 in 3. 1 ft 4. 18 in

A map has a scale 1 inch : 5 kilometers. Use the given actual distance to find the map distance.

5. 100 km 6. 45 km 7. 72 km 8. 9.5 km

End Day 3

Day 4

Example 2

A model car is made with a scale factor of 1 inch:11 inches or 1:11. The actual car is 7 feet 4 inches long. How long is the model car?

- Convert 7 feet 4 inches to inches to match the scale factor:
 $7 \text{ ft } 4 \text{ in} = 7 \cdot 12 + 4 = 84 + 4 = 88 \text{ in}$
- Write a proportion using the scale factor 1 : 11.
 $\frac{1}{11} = \frac{x}{88}$
- Solve the proportion.
 $\frac{1 \cdot 88}{11} \quad x = 8$
- The model car is 8 inches long.

Day 4: L11 Practice Problems

Use a proportion for each problem.

The cities of Lincoln City and Newport are 36 miles apart. Given the distance between the cities on each map, find the scale of each map.

9. 6 inches 10. 1 foot

11. A wall is 4 inches long in a scale drawing. The actual wall is 12 feet long. Find the scale of the drawing.

12. A sofa is 6 feet long. In a scale drawing, the sofa is 3 inches long. Find the scale of the drawing.

Day 4: L11 Practice Problems

Use a proportion for each problem.

13. A blue print of a house has a scale of 1 inch : 2 feet.

- a. Find the actual length of a wall that is 7 in on the blueprint.
b. Find the actual height of a door that is 4 in on the blueprint.

14. You are building a model of a new roller coaster with a scale of 1 : 51. The model is 4 ft tall. How tall is the actual roller coaster?

End Day 4

Answers

Day 1:

1. $x = 6$
2. $x = 8$
3. $y = 4.5$
4. $y = 32$

Day 3:

1. 30 miles
2. 75 miles
3. 120 miles
4. 180 miles
5. 20 inches
6. 9 inches
7. 14.4 inches
8. 1.9 inches

Day 4:

9. 1 inch : 6 miles
10. 1 foot : 36 miles OR 1 inch : 3 miles
11. 1 inch : 3 feet OR 1 : 36
12. 6 feet : 3 inches OR 24 : 1
13. a. 14 feet
 b. 8 feet
14. 204 feet

MATH 7: FINAL SLIDE for this week!