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Unit 7.1, Lesson 5: Notes

Name Islam 8/23/2024

My Notes

Area = SF ·

SF · Area

= 4 · 4 · 6

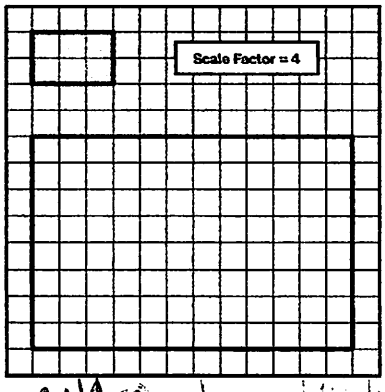
= 96

Area = 6

B = 3

H = 2

1. Nyanna says that the area of the large rectangle is 4 times the area of the small rectangle. Convince Nyanna that this is incorrect. Sketch on the rectangle to support your argument.



The area is not 4 times the area of the small rectangle because 6 · 4 = 24 the area is much bigger than that you would first multiply 4 · 4 = 16 then multiply 16 · 6 which is 96

2. Imagine scaling the small rectangle from Problem 1 using a scale factor of 5. What is the area of the scaled copy?

Explain or sketch your strategy.

Scaled Area formula

= SF · SF · Area

= 5 · 5 · 6

= 150

Scale base and height

B = 3 · SF

= 3 · 5 = 15

H = 2 · SF

= 2 · 5 = 10

B · H = 30 · 8

= 250

Summary

"To get a scaled area, multiply the original area by the scale factor twice.

- [x] I can describe how scale factor impacts the area of a scaled copy.
- [x] I can calculate the area of a scaled copy.

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Unit 7.1, Lesson 6: Notes

Name Ishaan

100%

My Notes

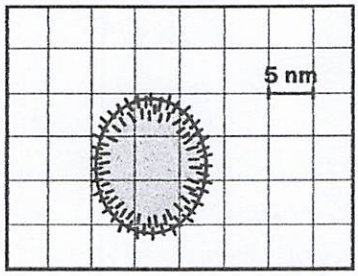
Diameter

1. In your own words, describe what a **scale** is.

A scale shows how much a distance on a map is in real life

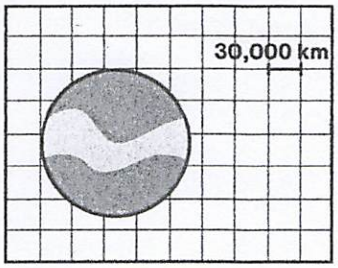
2. Estimate the diameter of the objects below.

Flu Virus



Diameter: 3.5 = 15 nm

Jupiter



Diameter: 4.8 • 30,000 = 144,000 km

3. Choose one object from Problem 2 and explain how you estimated its diameter.

The virus is about 3 units in the image. Each unit represented 5nm so 3*5nm = 15nm

Summary

•To find the a actual distance, count how many square it is on the grid and multiply by the scale that is given.

- [x] I can explain what a scale is.
- [x] I can interpret the scale of a drawing.

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Unit 7.1, Lesson 7: Notes

Name Eshaan

My Notes

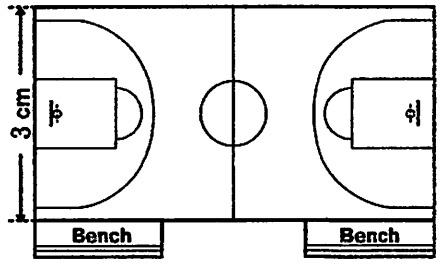
Same Angles and same Shape

1. What are some characteristics of scale drawings?

① Scale drawings are proportional to an actual object or place in real life

② The measurements represent actu measurements in real life.

2. Remy used the scale 2 cm to 10 m to create a scale drawing of a basketball court.



Explain what the numbers in the scale mean.

2cm of the map represents 10m in real life.

3. The width of the court in Remy s scale drawing is 3 centimeters. Explain how to use the scale from Problem 2 to determine the width of the actual court.

×3 1cm = 5m
2cm = 10m
3cm = 15m

Summary

- Scale drawings are proportional to objects and places in real life.

- [x] I can use a scale drawing and a scale to calculate actual and scaled distances.
- [x] I can determine actual areas from a scale drawing.

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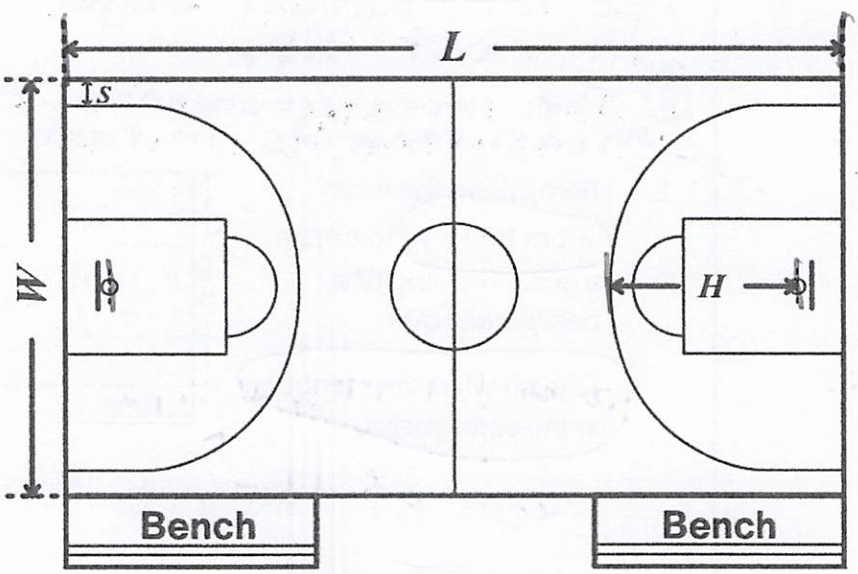
Unit 7.1, Lesson 7: Will It Fit? Name Ishaan

Activity 1: Will It Fit?

Here is the scale drawing that Karima presented to her neighborhood park s board of directors.



2cm = 5m

1. The scale for Karima s drawing is 2 cm to 5 m. Explain what this means in your own words.

   2 cm on the map equals 5m in real life.

2. Will Karima s court fit in the 20 -by- 20 -meter square area the park directors designated for the court? Use your measuring tools and the table below to help you with your thinking.

   Round each measurement to the nearest tenth of a centimeter.

	Length of Court (L)	Width of Court (W)	Hoop to 3-pt. Line (H)	3-pt. Line to Side Line (S)
Scale drawing	10.4 cm	5.5 cm	2.5 cm	0.3 cm
Actual court	26	13.75	6.25	0.75

   Explain how you know whether or not the court will fit.

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Unit 7.1, Lesson 7: Will It Fit? Name Ishaan

Are You Ready for More?

On an actual basketball court, the bench area is typically 9 meters long. Without measuring, determine how long the bench area should be on the scale drawing.

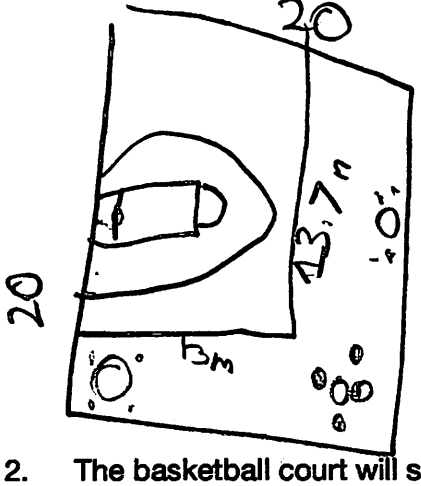
Does your answer match Karima's drawing?

Activity 2: Fix It

1.1 How would you recommend Karima adjust her proposal so that it fits? Explain your thinking.

- Scale our basketball court down
- Just build a half court

1.2 Sketch your proposed court for the 20-by-20-meter park area.
Label your sketch with all necessary distances.



2. The basketball court will share the 20-by-20-meter park area with an outdoor seating area. After the court is built, how much area will remain for outdoor seating? Explain your thinking.

Total Area = $20 \times 20 = 400 m^2$

Basketball Area = $13 \times 23.75 = 178.75 m^2$

Seating Area = $221.25 m^2$

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Unit 7.1, Lesson 7: Will It Fit? Name Ishaan

Lesson Synthesis

How could you use Karima's scale drawing to calculate the actual diameter of the center court circle? Describe your strategy.

	Diameter of Center Court Circle
Scale drawing	1.8 cm • 2.5
Actual court	?

2cm = 5cm
1cm = 2.5cm

I figured out how much 1cm on the map represented and multiplied that by 1.8cm

---

Cool-Down

A scale drawing of a school bus has a scale of $\frac{1}{2}$ in. to 5 ft. If the length of the school bus is 4 inches on the scale drawing, what is the actual length of the bus? Explain or show your reasoning.

$\frac{1}{2}$ in = 5ft

×2 ↓ ↓ ×2

1 in = 10 ft

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Unit 7.1, Lesson 8: Notes

Name _____

My Notes

1. What is important to remember when you create a scale drawing?

- calculate all new lengths the same way
- Draw all the angles so they are the same as the actual object

2.1 Kyrie wants to create two scale drawings of Nevada using the scales below.

Scale A:	Scale B:
1 cm to 14 mi.	2 cm to 40 mi. 1cm to 20 mi

Which scale will produce a larger scale drawing?

Explain your thinking.

Scale A will be larger because you're fitting less miles into the same space

2.2 What will be the same in both scale drawings?

- Both use a scale of 1cm
- Both represent the same distances in Nevada
- The angles will be the same

Summary

Get two scales to be same 1-15 and 1-20

- [x] I can create a scale drawing given a scale.
- [x] I can describe how different scales affect lengths in a scale drawing.

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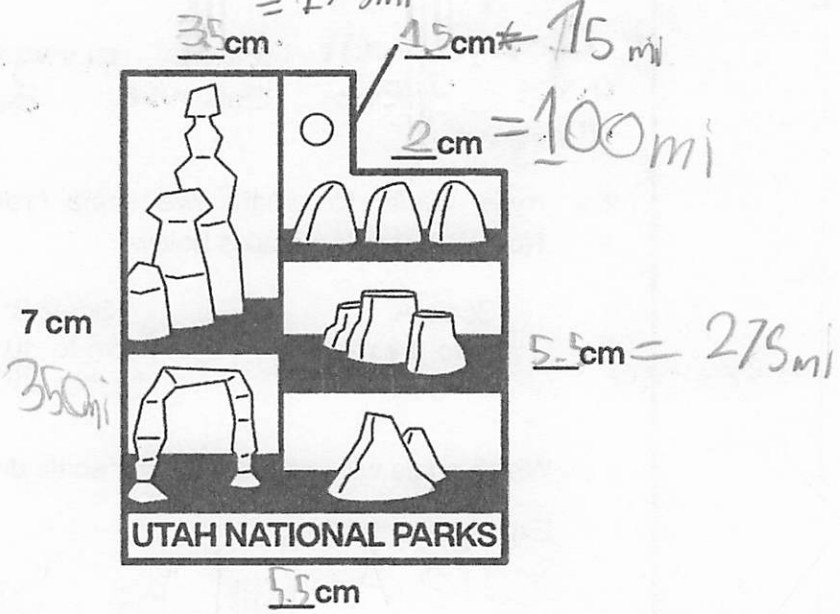
Unit 7.1, Lesson 8: Scaling States Name _____

Activity 1: Calculating Scaled Distances

Marco is designing an image to help promote Utah s national parks. His image includes a scale drawing of the state and the ve national parks within it.



1. In order to t the image on the yer, Marco draws a 7-centimeter line for Utah s western edge. The actual length of Utah s western edge is 350 miles. What scale does Marco use? Explain your thinking.

2. Help Marco complete his scale drawing by determining the rest of the lengths of Utah s outline. Label the lengths on the drawing above.

Since 7cm represented 350 miles, 350 becomes 50 when it's divided by 7.

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Unit 7.1, Lesson 8: Scaling States Name _____

Activity 2: Scaling Utah

Marco will print his design on di erent products (T-shirts, Post-it notes, phone cases, etc.). Work with your group to help Marco create di erent scale drawings of the outline of the design. You need a ruler and a blank piece of paper for this activity.

1. Select a scale for your scale drawing. Make sure each group member selects a di erent scale.

   A. 1 cm to 35 mi.
   C. 1 cm to 70 mi.
   B. 2 cm to 70 mi.
   D. 1 cm to 100 mi.

2. Before you create your drawing, do you think your scale drawing will t on a phone case? Explain your thinking.

   C and D would fit because they are smaller.

3. On a blank piece of paper, create your own scale drawing of Utah. Include the following:

   - ☐ A scale drawing of Utah
   - ☐ Labels for each length in the scale drawing
   - ☐ A scale for your scale drawing

Activity 2 Synthesis

Compare your scale drawings to other drawings in your group. What do you think will always be the same about scale drawings of the same object? What do you think can be di erent?

- Angles are same
- Real-life distances will be the same.
- The scaled drawing

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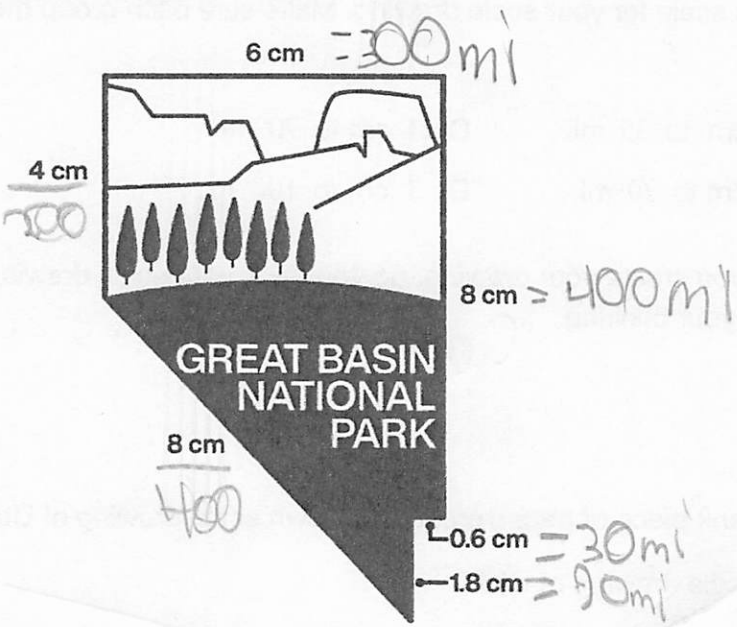
Unit 7.1, Lesson 8: Scaling States Name _____

Activity 3: Scaling Nevada

You need a ruler for this activity.

Marco is making di erent-si ed T-shirts to feature Great Basin National Park in Nevada. His design below is a scale drawing that uses the scale 1 cm to 50 mi.



1. If Marco uses the scale 3 cm to 100 mi., are the distances going to be shorter, longer, or the same si e as the distances in the drawing above? Explain your thinking.

2. Create a scale drawing of Nevada using a scale of 3 cm to 100 mi. on the back of this paper.

Activity 4: Comparing Scales

1. For this activity, you need a set of cards. Each card contains a di erent scale for printing the design on di erent T-shirt si es. Order the scales from the smallest T-shirt si e to the largest si e. Record your answer below.

Smallest T-shirt **Largest T-shirt**

1cm = 70 mi, 1cm = 23,3 mi, 1cm = 14 mi

2. Describe your strategy for ordering the cards.

Get all scales so they start with 1

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Unit 7.1, Lesson 1: Notes

Name Ishaan

My Notes

Proportional

means all ingredients or numbers for ↓ by a amount of the ratio

1. What is a **scaled copy**?

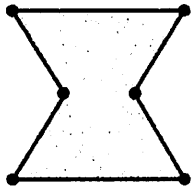
A copy of a figure that is the same shape but may or may not be the same size

2. What are characteristics of **scaled copies**?

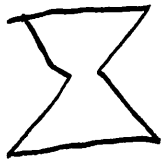
- All the same angles as the original even if lengths change
- If a shape is stretched or squished in one direction but not the other it is NOT a scaled copy
- All straight lines in original remain straight in copy

3. Draw two copies of the original shape.

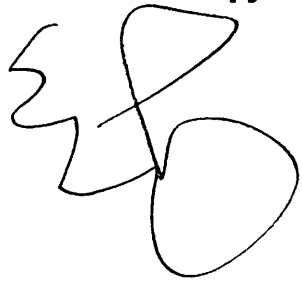
Original



Scaled Copy



Not a Scaled Copy



Summary

- scaled copies just get bigger or smaller, they don't stretch in just one direction

- [ ] I can use equivalent ratios to create a scaled copy of a figure.
- [ ] I can describe characteristics of a scaled copy.

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Unit 7.1, Lesson 2: Notes

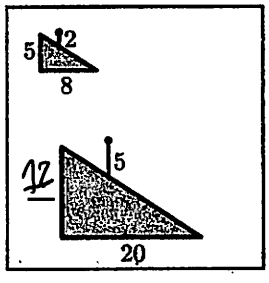
Name Ethan 8/20/2024

My Notes

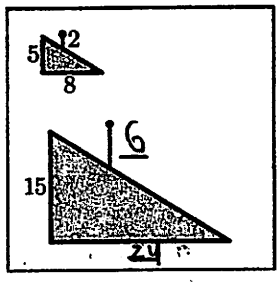
1. What is a **scale factor**? Draw an example.

A scale factor is the number by which we multiply all the lengths by in the original figure to create a scaled copy.

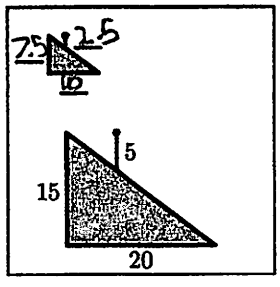
2. Fill in measurements so that the large robot is a scaled copy of the small robot. Then, identify the scale factor from the small robot to the large robot.



Scale factor: 2.5



Scale factor: 3



Scale factor: 2

Summary

Scale factor = new / original

* Multiply by all the original lengths

- [ ] I can explain what *scale factor* is.
- [ ] I can explain the proportional relationship between lengths in an original figure and in a scaled copy.

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Unit 7.1, Lesson 3: Notes

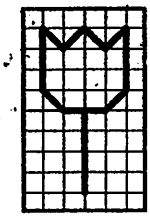
Name Isheen 8/21/2024

My Notes

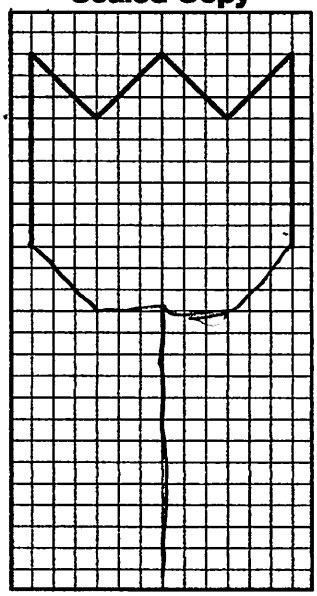
- Angle must be the same
- Everything get multiplied by the same scale factor

1. Draw the rest of the figure using a scale factor of 3.

Original



Scaled Copy



What is the length of the original stem? 4 grid units.

What is the length of the scaled stem? 12 grid units.

2. What do you keep in mind when drawing a scaled copy?

- check to make sure the angles of the scaled copy are the same as the original so the shape is correct
- Multiply the number of units in the original figure by the scale factor to calculate the distance in the scaled copy.

Summary

- Keep angles the same to make a scaled copy
- Multiply by the same scale factor all lengths

☐ I can draw a scaled copy of a figure using a given scale factor.

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Unit 7.1, Lesson 4: Notes Name Ishan

My Notes

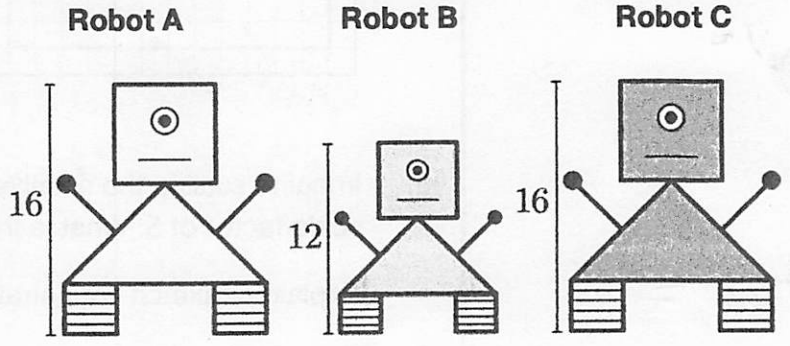
SF = new / old

1. A scale factor less than 1 makes a scaled copy smaller than the original.

   A scale factor greater than 1 makes a scaled copy larger than the original.

   A scale factor Equal to 1 makes a scaled copy the same size as the original.

2. Determine the scale factor between each pair of robots.



Robot A → Robot B: 3/4

Robot B → Robot C: 4/3

Robot A → Robot C: 1 - 16/16

Summary

•To find a scale factor, SF, divide the new length by the old length.

$SF = \frac{new}{old}$

- ☑ I can describe the e ect on a scaled copy when I use a scale factor that is greater than 1, between 0 and 1, or equal to 1.
- ☑ I can explain how the scale factor that takes one figure to another figure relates to the scale factor that takes the second figure back to the first.

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Unit 7.1, Lesson 8: Scaling States Name _____

Lesson Synthesis

Suppose there are two scale drawings of the same building. Drawing A uses the scale 1 cm to 2 m, and Drawing B uses the scale 1 cm to 4 m.

Which drawing is larger? Explain your thinking.

Drawing A because the smaller scale gives you a larger drawing

---

Cool-Down

You need a ruler for this cool-down.

Aaliyah is making a map of the local park. The park has a rectangular swimming pool that measures 50 meters in length and 25 meters in width.

Make a scale drawing of the swimming pool where 1 centimeter represents 10 meters. Label the side lengths of your scale drawing.

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Unit 7.1, Lesson 9: Notes

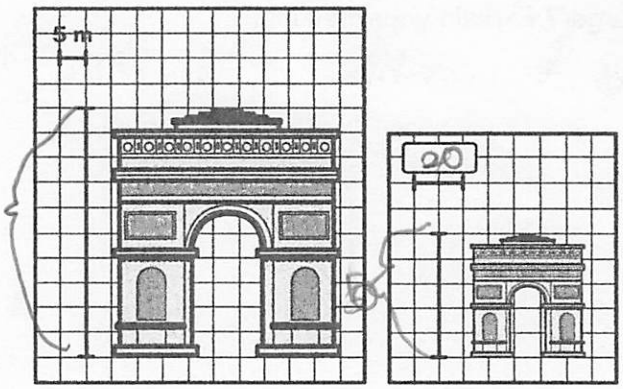
Name Isaan

My Notes

Scale • # boxes

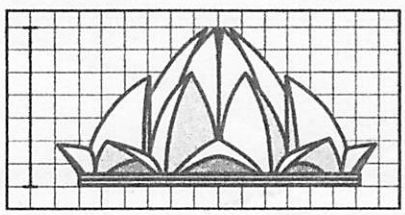
5 • 10 = 50

1. Complete the scale by filling in the blank with the number of meters the segment represents. Explain your thinking.



50 ÷ 5
= 10 each box
= 20 in two boxes

2. Here is a scale drawing of the Lotus Temple.
The scale of this drawing is 1 unit to 5 meters.



1 to 5

Overall Height
= 5 • 7 = 35 m

Write a **different** scale that will produce . . .

2.1 . . . a larger drawing. 1 unit to 2m

2.2 . . . a smaller drawing. 1 unit to 7m

2.3 . . . a drawing that is the same size. 2 units to 10m

• figure out what each box represents and multiply by the number of boxes.

Summary

- ☑ I can calculate a distance on one scale drawing based on another drawing with a different scale.
- ☑ I can determine the scale of a scale drawing.
- ☑ I can decide whether two scales will create scale drawings of the same size.

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Unit 7.1, Practice Day 1: Worksheet Name Isham

Draw It! Draw a scaled copy using the given scale factor.

Figure ____ Scale Factor: ____

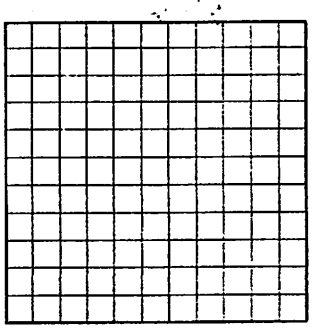
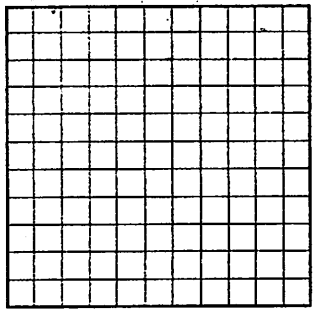
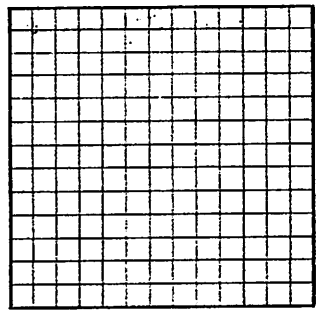


Figure ____ Scale Factor: ____

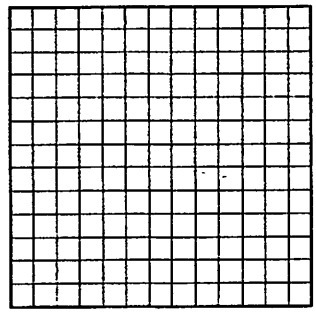


Ready for More? (Leave until the end)

Original



Scaled Copy



Reverse It! Calculate the scale factors between figures A and B.

1. From A to B:

   From B to A:

2. From A to B:

   From B to A:

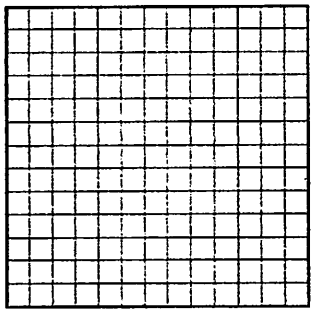
3. From A to B:

   From B to A:

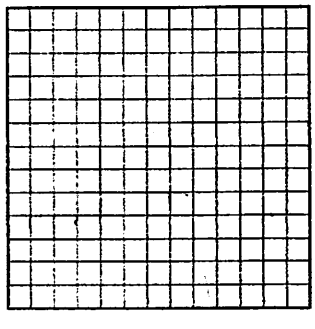
4. The relationship between a scale from A to B and reverse scale factor from B to A

Are You Ready for More? (Leave until the end)

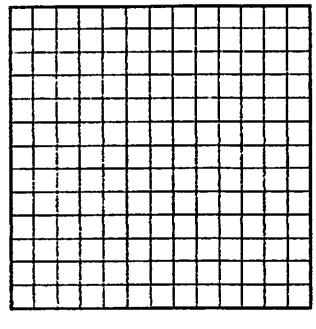
1.



2.



3.



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Unit 7.1, Practice Day 1: Worksheet Name Peyton

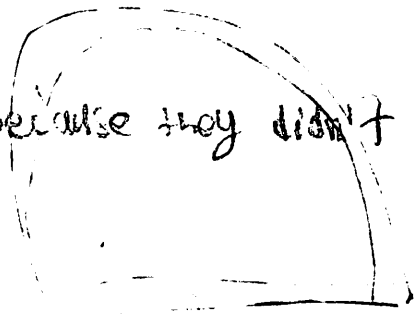
Choose It! Select all that apply.

1. B and D 2. A and C 3. A, C, and D

Are You Ready for More? (Leave until your done with everything else)

1. We did none because one is incorrect in the scale factor.

2. We didn't do B and C because they didn't match



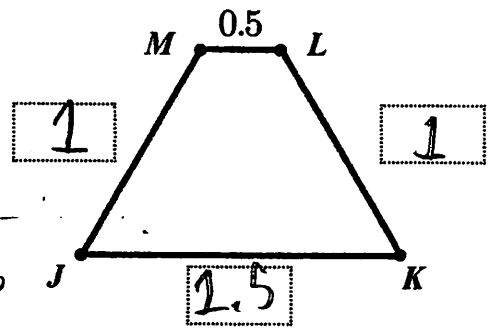
Fix It! Help each person understand why their strategy was incorrect and what to change.

1.1 It's because side lengths aren't the same

1.2 Use scale factor when multiply by one and the rest

2. Maya's area is not 56 sq. units

1.3



Are You Ready for More? (Leave until the end)

PShaun 8/25/2014

Multiplying Fractions Review

Products

① $5 \cdot 4 = 20$

② $2 \cdot 6 = 12$

③ $9 \cdot 3 = 27$

Compare the Products with the starting Number. What do you notice?

The products are larger

Starting Number

What kinds of numbers are these?

Whole Intergars

④ $6 \cdot \frac{1}{2} = 3$

$\frac{6}{1} \cdot \frac{1}{2} = 3$

$\frac{6 \cdot 1}{1 \cdot 2} = 3$

$\frac{6}{2} = 3$

STEP 1: Put 1 as the denominator under 6

STEP 2: Multiply straight across

STEP 3: Simplify Fraction

Products

⑤ $8 \cdot \frac{1}{4} = 2$

⑥ $12 \cdot \frac{1}{3} = 4$

Compare the Products with the starting Number. What do you notice?

The products are smaller

Starting Number

What kinds of numbers are these?

fractions

If your SF is > 1 = Answer is bigger

< 1 = Answer is smaller.

Practice

⑦ $5 \cdot \frac{4}{5} = 4$

⑧ $3 \cdot \frac{2}{7} = \frac{6}{7}$

⑨ $8 \cdot \frac{3}{4} = 6$

Simplifying Improper Fractions

⑩ $\frac{19}{2} = 9\frac{1}{2}$

STEP 1: ~~Ask~~ how many times denominator goes into numerator

$2\overline{)19}$ → 8

$2\overline{)19}$ → 8 R1

STEP 2: Ask what is the remainder

STEP 3: Rewrite with quotient (8) first with the remainder (1) over the original denominator (2)

$8\frac{1}{2}$

⑪ $\frac{13}{3} = 4\frac{1}{3}$

⑫ $\frac{27}{5} = 5\frac{2}{5}$

Multiplying & Simplifying Practice

⑬ $1 \cdot \frac{1}{6} = \frac{1}{6}$

⑭ $7 \cdot \frac{4}{8} = 3\frac{4}{8}$

⑮ $9 \cdot \frac{7}{10} = 6\frac{3}{10}$