

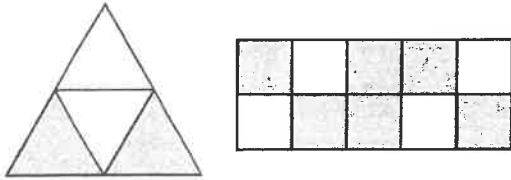
IP-Mental Math Percent Problem-Solving Practice

Find Percent of a Number Mentally

1. The state of Pennsylvania covers almost 29 million acres. Of the total acreage, about 53% is forest land. About how many acres of forest land are in the state of Pennsylvania?

2. In a recent year, there were 320 endangered mammals in the world. About 75% of these mammals reside outside of the United States. About how many endangered mammals are not in the United States?

3. The figures below represent two game boards. The object of the game is to toss a bean bag so that it lands on a shaded region. Which game board gives a player the best chance of throwing a bean bag so that it lands on a shaded region? Explain.



4. Sydney has \$20 and wants to buy a CD of her favorite group. She finds a two-disc set of greatest hits that costs \$18.99. The sales tax in her state is 5%. Does she have enough money to buy the CD? Explain.

5. The table shows the total area of eight states in square miles and the area of the state that is covered by water.

State	Area of state (square miles)	Water Area (square miles)
Michigan	96,716	39,912
Hawaii	10,931	4508
Rhode Island	1545	500
Massachusetts	10,555	2715
Delaware	2489	536
Maryland	12,407	2633
Florida	65,755	11,828
Wisconsin	65,498	11,188

Which state has a water area that is about 25% of the area of the state?

6. Refer to the table in Exercise 5. Which state has about one-third of its area covered by water?

IP-Mental Math Percent Homework Practice***Find Percent of a Number Mentally*****Find the percent of each number mentally.**

1. 10% of 812

2. 50% of 1044

3. 40% of 25

4. 20% of 45

5. $62\frac{1}{2}\%$ of 80

6. 80% of 15

7. 30% of 400

8. 75% of 880

9. $16\frac{2}{3}\%$ of 72

10. $33\frac{1}{3}\%$ of 150

11. 60% of 2500

12. $37\frac{1}{2}\%$ of 48

Estimate.

13. 32% of 26

14. 47% of 213

15. 22% of 536

16. 68% of 12

17. 11% of 29

18. 78% of 4

19. $\frac{1}{2}\%$ of 381

20. $\frac{1}{6}\%$ of 567

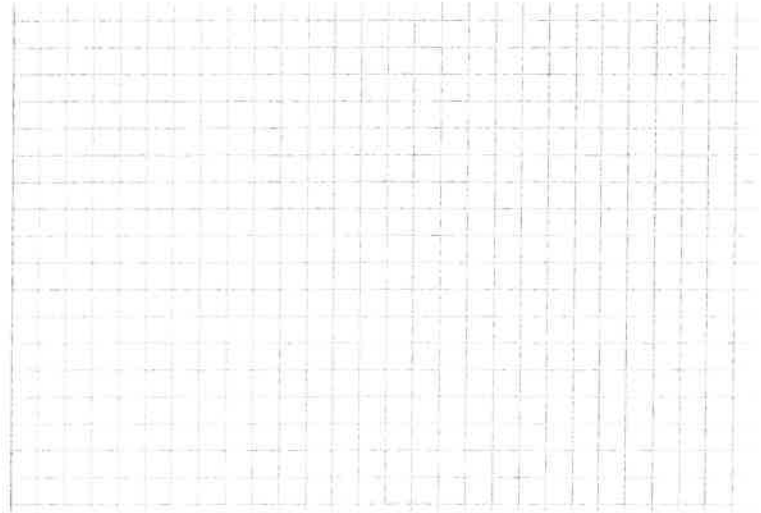
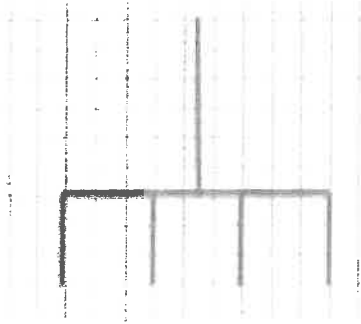
21. $\frac{2}{3}\%$ of 856

22. Last week a waitress made \$204 in tips. This week she made 135% of that. About how much did she make this week?

Lesson 12 Problem Set

1. Use the diagram below to create a scale drawing using a scale factor of 150%. Write numerical equations to find the horizontal and vertical distances in the scale drawing.

Is this a... (circle one) reduction or enlargement ?



Measurements:

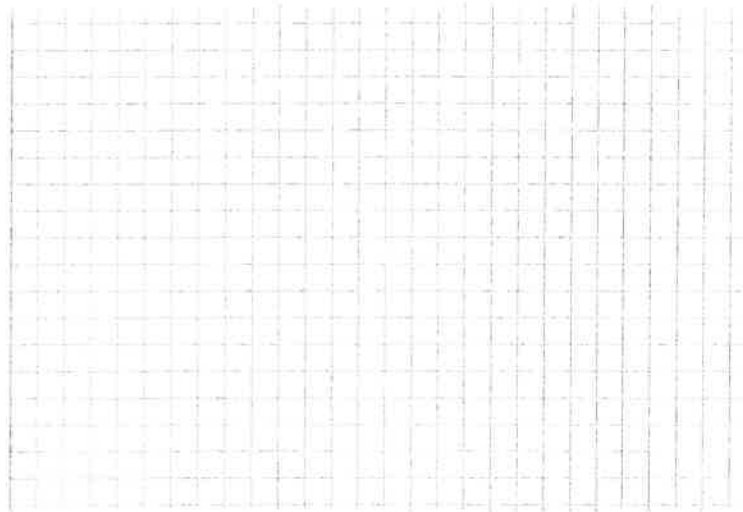
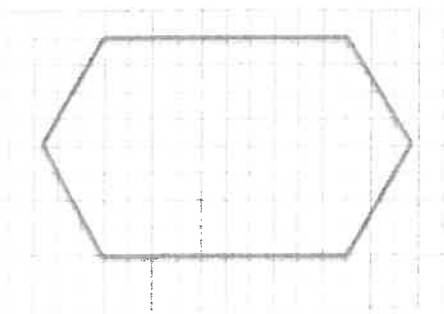
Handle =

Horizontal line =

Vertical prongs =

2. Create a scale drawing of the original drawing given below using a scale factor of 80%. Write numerical equations to find the horizontal and vertical distances.

Is this a... (circle one) reduction or enlargement ?



Measurements:

Top and bottom length =

Distance across middle =

3. The accompanying diagram shows that the length of a pencil from its eraser to its tip is 7 units and that the eraser is 1.5 units wide. The picture was placed on a photocopier machine and reduced to 66%. Find the new size of the pencil.
Write numerical equations to find the new dimensions.

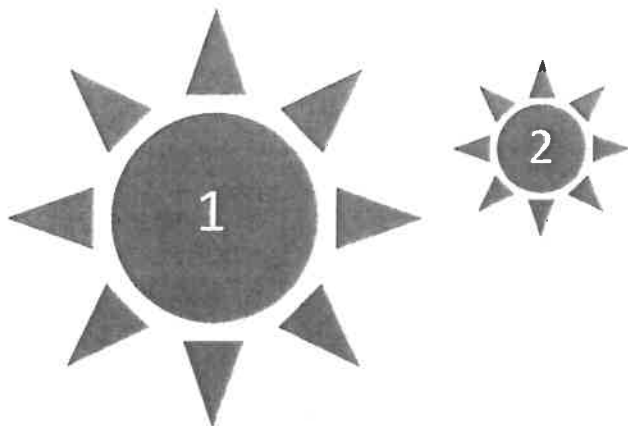


Height = _____

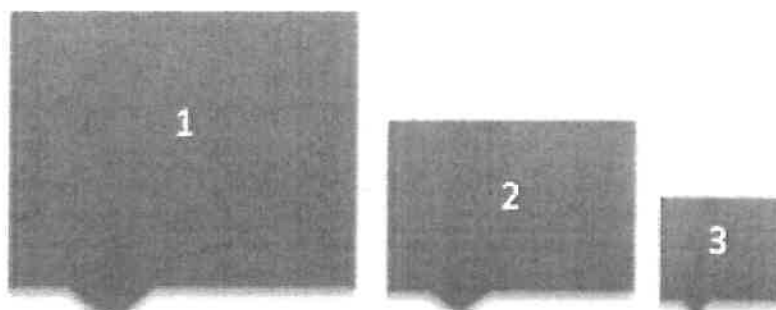
Length = _____

Lesson 13 Problem Set

1. The scale factor from Drawing 1 to Drawing 2 is 40%. Justify why Drawing 1 is a scale drawing of Drawing 2 and why it is an enlargement of Drawing 2. Include the scale factor in your justification.



2. The scale factor from Drawing 1 to Drawing 2 is 40%, and the scale factor from Drawing 2 to Drawing 3 is 37.5%. Is Drawing 3 a reduction or enlargement of Drawing 2? Explain your reasoning, and prove your answer using the scale factor.



3. Traci took a photograph and printed it to be a size of 4 units by 4 units as indicated in the diagram. She wanted to enlarge the original photograph to a size of 5 units by 5 units and 10 units by 10 units.



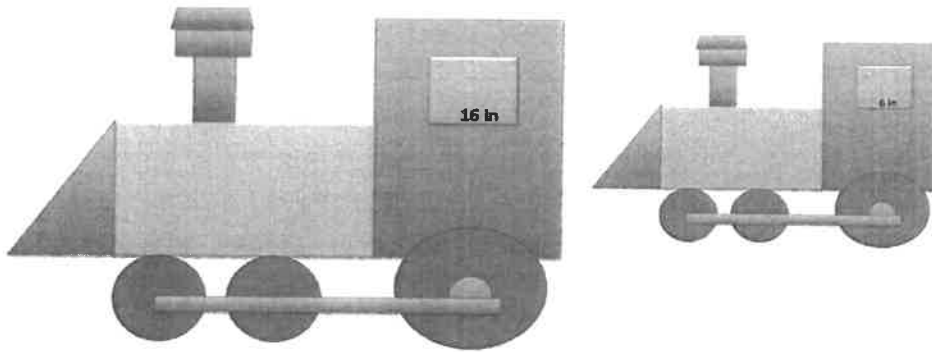
- Sketch the different sizes of photographs.
- What was the scale factor from the original photo to the photo that is 5 units by 5 units?
- What was the scale factor from the original photo to the photo that is 10 units by 10 units?

$$\text{scale drawing} = (\text{scale factor}) \times \text{actual/original}$$

Lesson 14 Problem Set

Name _____

- The smaller train is a scale drawing of the larger train. If the length of the tire rod connecting the three tires of the larger train, as shown below, is 36 inches, write an equation to find the length of the tire rod of the smaller train. Interpret your solution in the context of the problem.



Step 1: Compare a length in the original to a length in the scale drawing to find the scale factor.

Window length original = 16 in

Window length scale drawing = 6 in

Scale Factor = _____

Step 2: Use the scale factor to find the length of the tire rod on the smaller train (the scale drawing).

Length of longer tire rod = _____

Length of shorter tire rod = _____

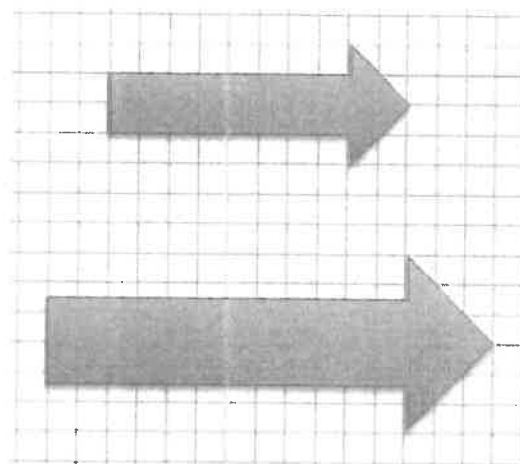
2. The larger arrow is a scale drawing of the smaller arrow. The distance around the smaller arrow is 25.66 cm. What is the distance around the larger arrow? Each square represents 1 cm.

Step 1: Compare a length in the original to a length in the scale drawing to find the scale factor.

Length in original = _____

Length in scale drawing = _____

Scale Factor = _____



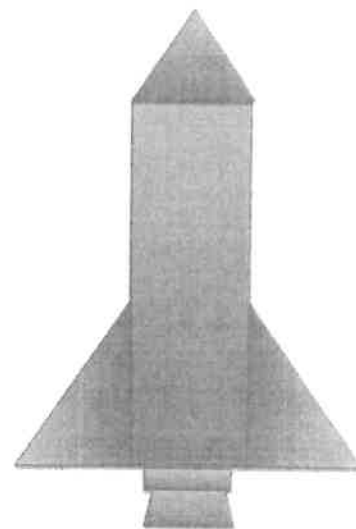
Step 2: Use the scale factor to find the distance around the larger arrow (the scale drawing).

Distance around shorter arrow = _____

Distance around larger arrow = _____

3. The figure is a diagram of a model rocket and is a two-dimensional scale drawing of an actual rocket. The length of the model rocket is 2.5 feet, and the wing span is 1.25 feet. If the length of an actual rocket is 184 feet, use an equation to find the wing span of the actual rocket.

	Scale model rocket	Actual rocket
Length		
Wing span		



$$\text{scale drawing} = (\text{scale factor}) \times \text{actual/original}$$

Lesson 15 Problem Set

Name _____

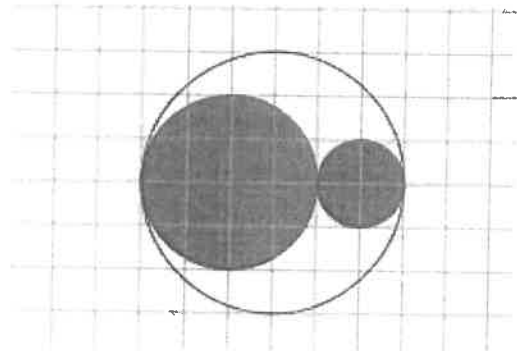
1. What percent of the area of the larger circle is shaded?

Area small =

Area medium =

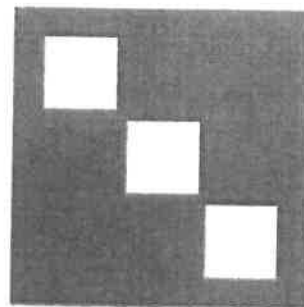
Area large =

$$A = \pi r^2$$



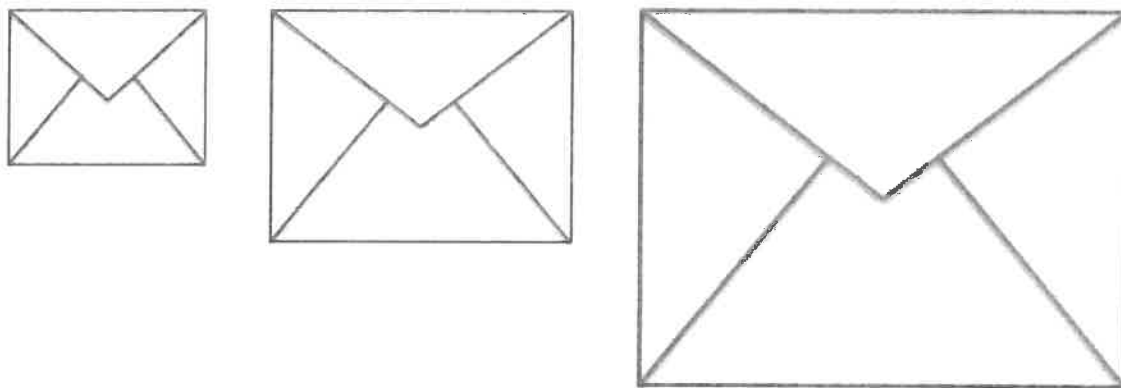
SO, the areas of the small and medium are *what percent of the area of the large circle?*

2. In the photo frame depicted below, three 5 inch by 5 inch squares are cut out for photographs. If these cut-out regions make up 18.75% of the area of the entire photo frame, what are the dimensions of the photo frame?



$$\text{scale drawing} = (\text{scale factor}) \times \text{actual/original}$$

3. Kelly was online shopping for envelopes for party invitations and saw these images on a website.



The website listed the dimensions of the small envelope as 6 in by 8 in, and the medium envelope as 15 in by 20 in.

- a. Compare the dimensions of the small and medium envelopes. If the medium envelope is a scale drawing of the small envelope, what is the scale factor?

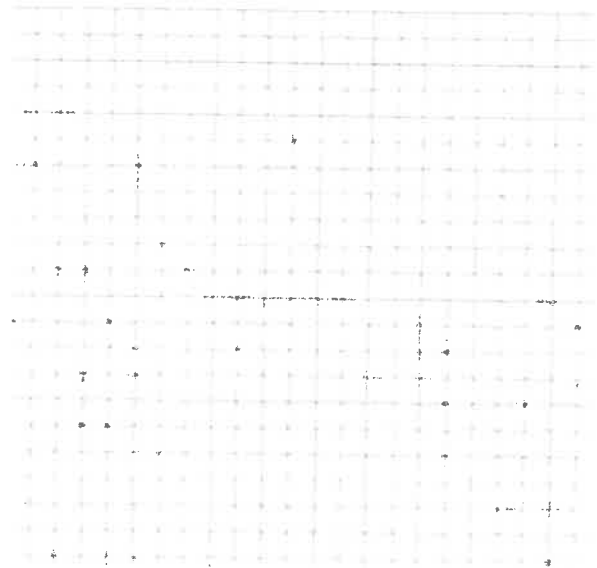
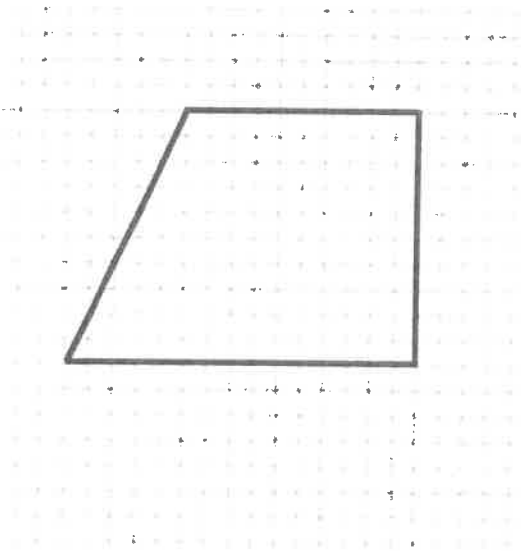
- b. If the large envelope was created based on the dimensions of the small envelope using a scale factor of 360%, find the dimensions of the large envelope.

Module 4 Topic C STUDY GUIDE

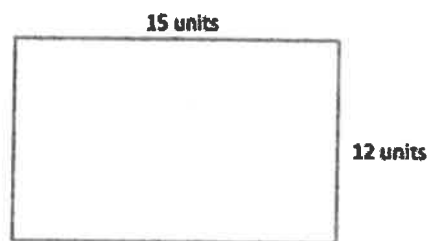
Name _____

Directions: Read all questions and show all work.

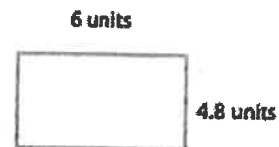
1. Create a scale drawing of the picture on the left, using a scale factor of 20%. Label the dimensions on the original and scale drawing.



2. Compute the scale factor, as a percent, for each given relationship. If necessary, round your answer to a whole percent.



Drawing 1

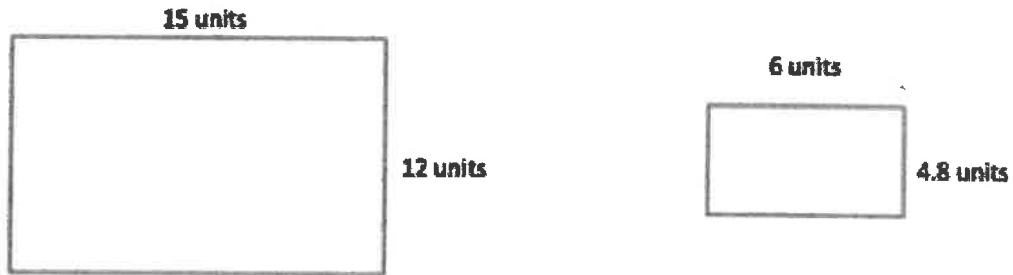


Drawing 2

a) Drawing 1 to Drawing 2

b) Drawing 2 to Drawing 1

3. Write an equation relating the area of the original (larger) drawing to its smaller scale drawing. What percent of the area of the larger drawing is the smaller scale drawing?

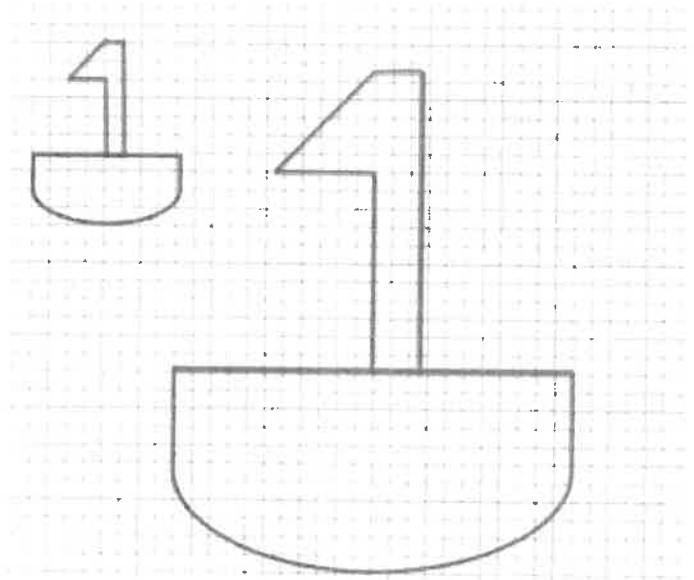


EQUATION: _____

PERCENT of the AREA: _____

4. The distance around the entire small boat is 18.6 units. The larger boat is a scale drawing of the small boat.

a) Find the scale factor.



b) Find the distance around the entire large boat.

5. A printing company is enlarging the image on a postcard to make a greeting card. The enlargement of the postcard's rectangular image is done using a scale factor of 250%. Be sure to show all other related math work used to answer the following questions.

a) Represent a scale factor of 250% as a fraction and decimal.

b) The postcard's dimensions are 6 inches by 4 inches. What are the dimensions of the greeting card?

