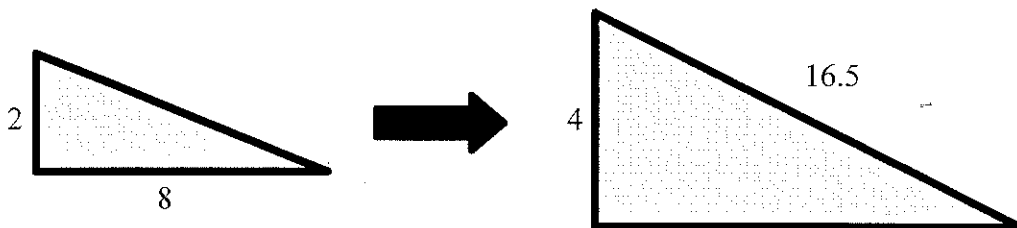
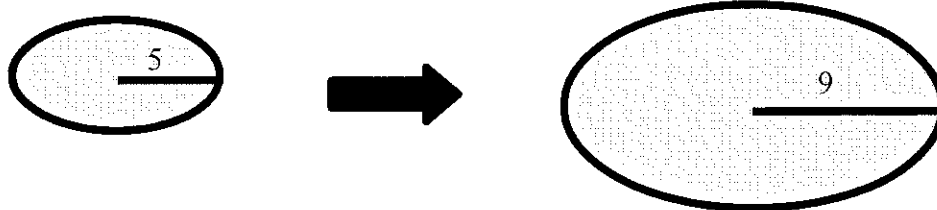


1. Determine the scale factor of the following enlargements:



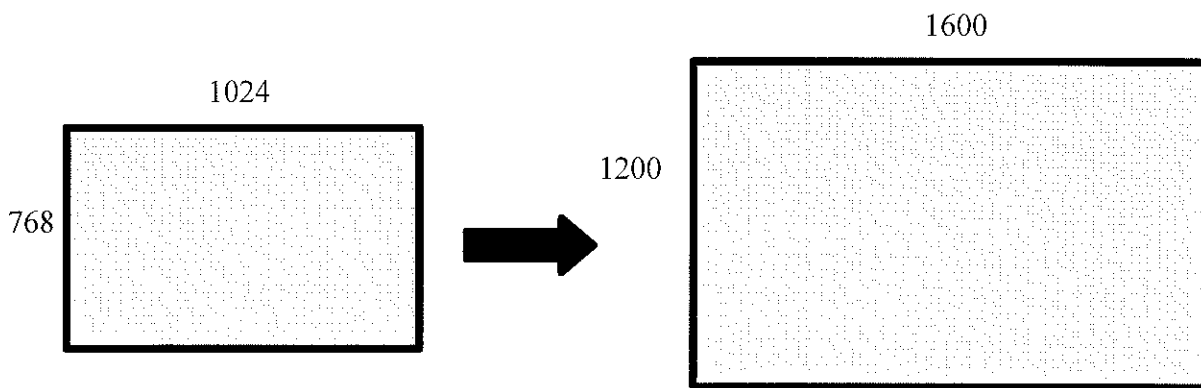
$$\text{Scale factor} = \frac{\text{new}}{\text{old}} = \frac{4}{2} = 2$$

Scale Factor: 2



$$\frac{9}{5}$$

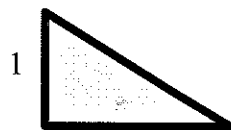
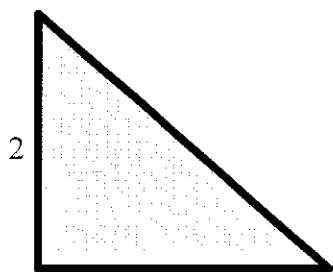
Scale Factor: 1.8



$$1600 \div 1024 =$$

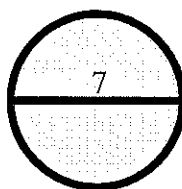
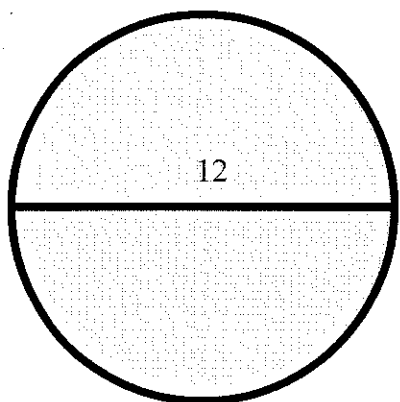
Scale Factor: 1.5625

2. Determine the scale factor of the following reductions



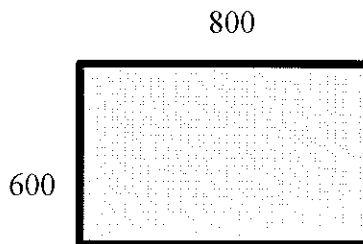
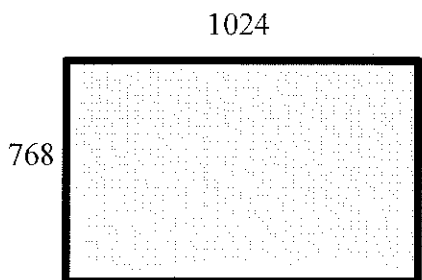
$$\text{Scale factor} = \frac{\text{new}}{\text{old}} = \frac{1}{2} = 0.5$$

Scale Factor: 0.5



$$\frac{7}{12}$$

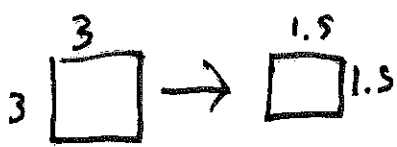
Scale Factor: 0.5833



$$\frac{800}{1024}$$

Scale Factor: 0.78125

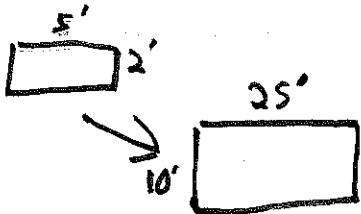
3. A 3" x 3" square is reduced by a scale factor of 0.5. What are the new side lengths?



$$3'' \times 0.5 = 1.5''$$

$$1.5'' \times 1.5''$$

4. A 5' x 2' rectangle is enlarged by a scale factor of 5. What are the new side lengths?



$$5' \times 5 = 25'$$

$$2' \times 5 = 10'$$

$$25' \times 10'$$

5. A model train locomotive is 0.5 feet long, the real locomotive is 43.5 feet long. What is the scale factor of the reduction from real train to model?

$$\text{Scale factor} = \frac{\text{new}}{\text{old}} = \frac{0.5}{43.5} = \frac{1}{87} \text{ or } 0.0115$$

6. The "Spitfire" was a British WWII plane, the real plane had a wingspan of 11.23 metres.

a) What will the scale factor be of a model with a wingspan of 1 metre?

$$\frac{1}{11.23} = 0.0890$$

b) The real plane was 9.12 metres long, how long will the model be?

$$9.12 \times 0.089 = 0.81 \text{ m}$$

c) The real plane was 11ft, 5 inches in height, how tall will the model be?

$$11 \text{ ft}, 5 \text{ in} \quad \frac{1 \text{ ft}}{12 \text{ in}} = \frac{x \text{ ft}}{5 \text{ in}} \quad 5 \times 1 \div 12 = 0.42$$

$$11.42 \text{ ft} \times 0.089 = 1.02 \text{ ft}$$

7. A map is a $\frac{1}{10000}$ scale reduction of the real world. If two places are 20 cm apart on the map, how far apart are they in reality?

$$20 \div \frac{1}{10000} = 200000 \text{ cm}$$

$$= 2000 \text{ m}$$


$$= 2 \text{ km}$$

8. A designer is told to increase the size of an image by 40%, what is this as a scale factor?

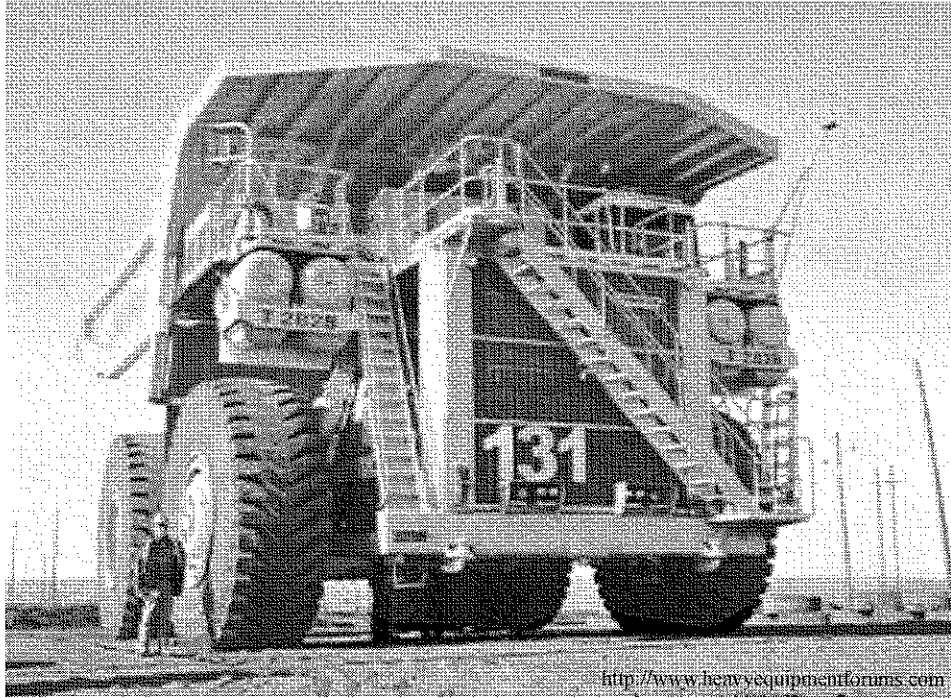
Imagine the shape is a 1x1 square

40% of 1 is 0.4, so increasing the size

by 40% is adding 0.4 to each side.

1.4  , Scale factor = $\frac{\text{new}}{\text{old}} = \frac{1.4}{1} = 1.4$

$$\frac{40}{100} = \frac{x}{1}$$



$$\frac{1\text{ft}}{12\text{in}} = \frac{6\text{ft}}{x}$$

9. The man above is six feet tall in real life.

a) Using a ruler measure how tall the man is in the picture and determine the scale factor of the picture as a reduction from real life.

Man is about $\frac{3}{4}'' = 0.75''$

$$6\text{ft} = 72\text{in}$$

$$\text{Scale factor} = \frac{\text{new}}{\text{old}} = \frac{0.75}{72}$$

b) Using a ruler measure the height of the truck in the picture and determine how tall the truck is in real life.

$$= 0.0104$$

Truck is about 3''

Option #1

$$\frac{0.75''}{6'} = \frac{3''}{x}$$

$$x = 24'$$

Option #2

$$3'' \div 0.0104 = 288.46'' = 24.04'$$

Answers are different due to rounding of scale factor