

Challenge: Skills and Applications

For use with pages 649–655

In Exercises 1–4, solve the percent problem.

1. $\frac{1}{2}$ is what percent of $\frac{3}{4}$?
2. How much is 30% of $\frac{2}{3}$?
3. $\frac{3}{8}$ is 19% of what number?
4. $\frac{4}{5}$ is what percent of $\frac{10}{7}$?

In Exercises 5–7, use the following information.

The length and width of a map that measures 14 inches by 20 inches are each decreased by a scale factor of $\frac{3}{4}$. The scale factor of $\frac{3}{4}$ tells you that each new dimension is $\frac{3}{4}$ of the original dimension.

5. What is the area of the reduced image of the map?
6. By what scale factor is the area of the map changed? Give your answer as a fraction in lowest terms.
7. Based on the answer from Exercise 6, state a general rule about how the area of an image is changed when its length and width are changed by scale factor p .

In Exercises 8–9, use the following information.

In her work for a magazine publisher, Leona Saunders scanned a photograph into electronic form and then loaded it into a graphics editing program, where she reduced the size of the photograph by 40% so that it would fit on a page of the magazine. This size turned out to be too small, so she increased the size of the reduced image by 20%.

8. Find the scale factors of the two size changes that Leona performed. Then calculate the scale factor of the final size in relation to the original size. Give answers in decimal form.
9. A photograph of an image is reduced by $x\%$ and then increased by $y\%$. Write an expression in terms of x and y that gives the scale factor of the net size change.
10. The size of an image is increased by 25%. What further percent increase in size will make the net scale factor of the final image $\frac{3}{2}$ in relation to its original size?