ACE Answers

Investigation 1

Applications

1. a. Answers will vary. Possible answers:

The seventh-grade goal is twice the fifth-grade goal.

Each grade's goal is \$60 more than the previous grade's goal.

The sixth-grade goal is $1\frac{1}{2}$ times the fifth-grade goal.

b. Answers will vary. Possible answers:

The teachers' goal is $\frac{3}{4}$ of the eighth-grade goal.

For every \$75 the teachers plan to collect, the eighth graders plan to collect \$100.

The teachers' goal is \$75 less than the eighth graders' goal.

2. $\frac{24}{32}$ or $\frac{3}{4}$

3. a. This is true. If the teacher made groups of 2 boys and 4 girls, there would be six of these groups with no children left out of a group.

b. Answers will vary. Possible answers:

There are twice as many girls as boys.

There are 12 more girls than boys.

4. There could be 3 boys and 2 girls. There could be 6 boys and 4 girls, 9 boys and 6 girls, etc. If the class is going to be close in size to the one in ACE Exercise 3, there could be 21 boys and 14 girls. In each of these possibilities, you can think about making groups of 3 boys and 2 girls. The ratio does not tell you how many of these groups there are, so there are many possibilities.

5. Possible answers: eighths, twelfths and sixteenths (multiples of 4)

6. halves, fourths, twelfths

7. $\frac{1}{4}$

8. $\frac{3}{4}$

9. $\frac{2}{3}$

10. a. Shown are $\frac{3}{4}$, $\frac{6}{8}$, $\frac{12}{16}$.

b. Another equivalent fraction would be $\frac{15}{20}$.

11. a. $\frac{5}{5}$ is the same as 1.

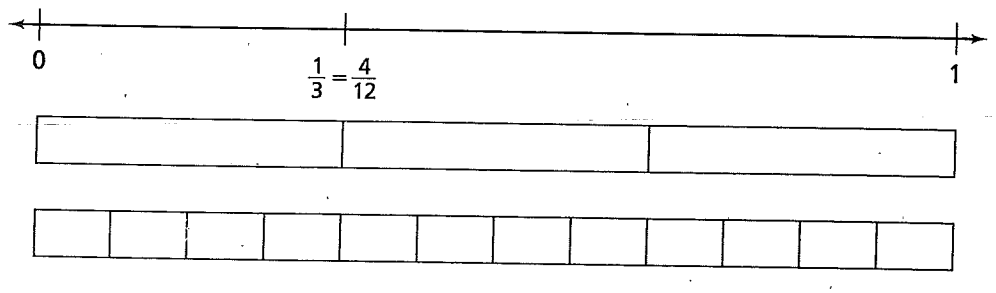
b. Sally is correct. Any two segments are $\frac{2}{5}$ of a whole. She is concentrating on a fraction as a *part of a whole*. However, if you took any two segments and lined them up to start with 0, you would arrive at a *location* of $\frac{2}{5}$ on the number line.

c. $\frac{1}{5}$ would now be marked with $\frac{2}{10}$, $\frac{2}{5}$ with $\frac{4}{10}$, $\frac{3}{5}$ with $\frac{6}{10}$, $\frac{4}{5}$ with $\frac{8}{10}$, and 1 with $\frac{10}{10}$. These are equivalent fractions. For every one fifth there are two tenths, so for two fifths there are four tenths, etc.

d. Possible answers: For every one half, there would be 5 tenths. For every one whole, there would be 10 tenths.

12. Correct. (See Figure 1 for possible picture of number line and fraction strips.)

Figure 1



13. Correct. (See Figure 2 for possible picture of number line and fraction strips.)

14. Incorrect. (See Figure 3 for possible picture of number line and fraction strips.)

15. Incorrect. (See Figure 4 for possible picture of number line and fraction strips.)

16. (See Figure 5.)

17. (See Figure 6.)

18. Possible answer: You could draw a fraction strip and divide it into five equal parts. Shade three of these parts to represent $\frac{3}{5}$. Then divide each of the five parts into two equal parts. You would then have ten equal parts, and six of the parts would be shaded. Therefore, $\frac{3}{5}$ is the same as $\frac{6}{10}$, so is equivalent to $\frac{3}{5}$.

Figure 2

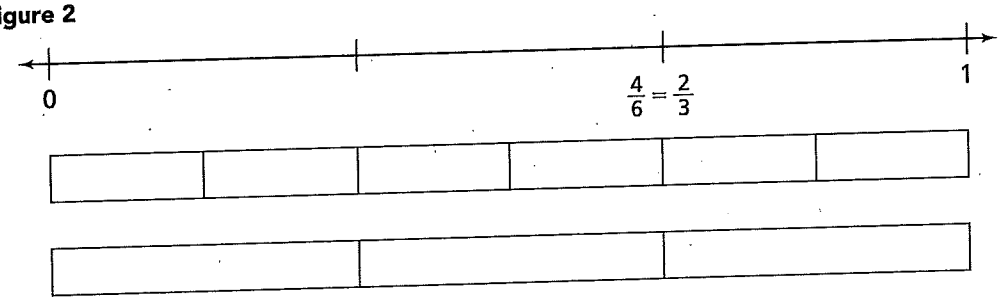


Figure 3

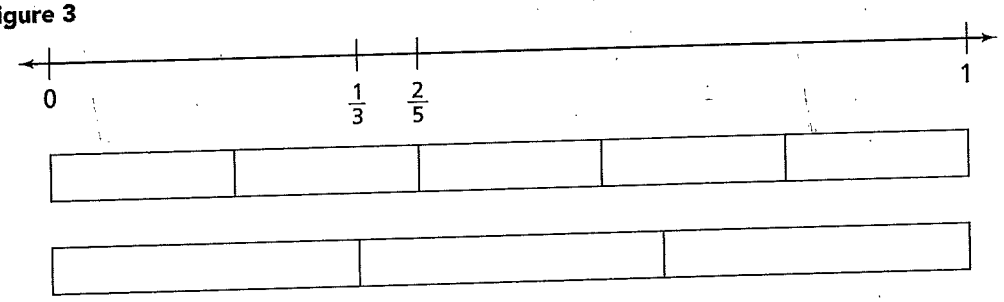


Figure 4

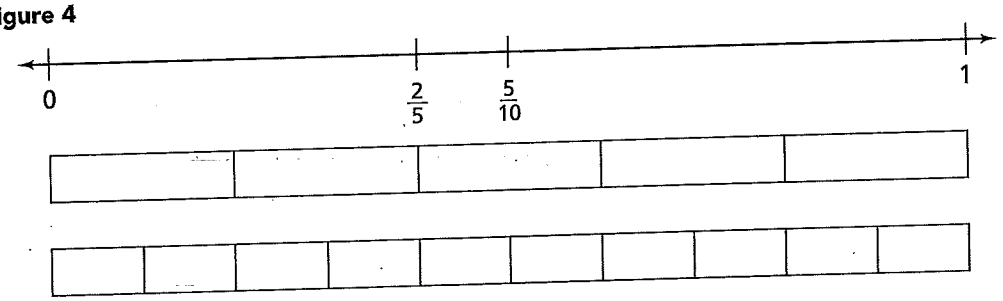
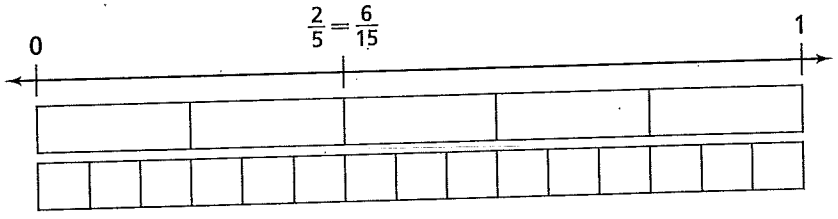


Figure 5



19. **a.** $\frac{3}{4}, \frac{6}{8}, \frac{12}{16}$

b. 2.1 GB

20. The diagram below shows that the distance between these fractions is $\frac{1}{8}$. (See Figure 7.)

21. $\frac{1}{4}$; other estimates are acceptable

22. $\frac{3}{8}$; other estimates are acceptable

23. **a.** about two thirds $\left(\frac{2}{3}\right)$

b. about 80 cups

c. about one third $\left(\frac{1}{3}\right)$

d. about 40 cups

24. A

25. J

26. $\frac{37}{120} \approx \frac{1}{3}$, $\frac{10}{120} = \frac{1}{12}$

27. **a.** $\frac{5}{6}$ of a dispenser is almost full. (See Figure 8.)

b. $\frac{3}{12}$ of a dispenser is almost empty. (See Figure 9.)

c. $\frac{5}{8}$ of a dispenser is about half full. (See Figure 10.)

28. $\frac{155}{755}$ or $\frac{1}{5}$

29. The MathCast: $\frac{45}{60}$ or $\frac{3}{4}$ of the podcast has been downloaded.

The Fraction Podcast: $\frac{20}{30}$ or $\frac{2}{3}$ of the podcast has been downloaded.

Figure 6

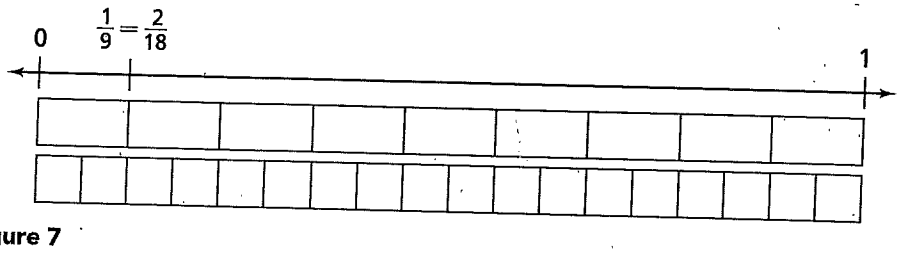


Figure 7

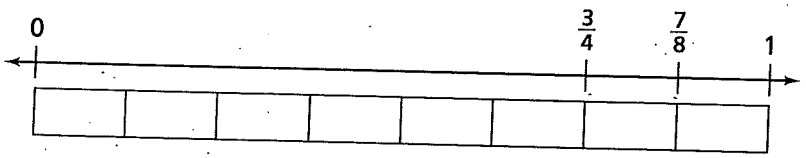


Figure 8

Figure 9

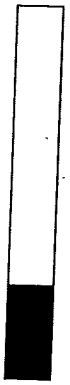


Figure 10