Rates, Ratios, and Proportions Quiz Study Guide

Write each ratio as a fraction in simplest form. Write each ratio in three ways.

1. 7th-grade boys to 6th-grade boys $\frac{26}{30} \rightarrow \frac{13}{15}$, 13:15, 13 to 15

2. 7th-grade girls to 6th-grade boys $\frac{34}{30} \rightarrow \frac{17}{15}$, 17:15, 17 to 15

3. 7th graders to 6th graders $\frac{60}{52} \rightarrow \frac{15}{13}$, 15:13, 15 to 13

4. boys to girls $\frac{56}{56} \rightarrow \frac{1}{1}$, 1:1, 1 to 1

5. girls to all students $\frac{56}{112} \rightarrow \frac{1}{2}$, 1:2, 1 to 2

	Boys	Girls	
7th Grade	26	34	= 60
6th Grade	30	22	= 52

56   56

Find each unit rate.

6. 78 mi on 3 gal

$\frac{78}{3} = \boxed{26\,mi/gal}$

7. $52.50 in 7 h

$\frac{52.5}{7} = \boxed{\$7.50/hr}$
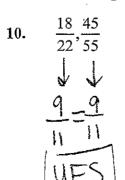
8. 416 mi in 8 h

$\frac{416}{8} = \boxed{52mph}$

9. A 64-ounce container of sports juice costs $6.50. A 48-ounce container of the same juice costs $4.25.

Which size container is the better buy?

$\boxed{64oz}$ $\approx \$0.10/oz$ $\boxed{48oz}$ ★Better Buy

$\frac{\$6.50}{64}$ $\frac{\$4.25}{48} \approx \$0.09/oz$

The 48 oz container is the better buy b/c $0.09 is less than $0.10.

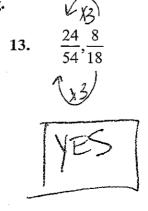**Do the following ratios form a proportion? Show your work to explain to reasoning.**

10. $\frac{18}{22}, \frac{45}{55}$

$\frac{9}{11} = \frac{9}{11}$

$\boxed{YES}$

11. $\frac{8}{9}, \frac{4}{3}$

8×3 VS 9×4
24 ≠ 36

$\boxed{no}$

12. $\frac{3}{5}, \frac{5}{3}$

5×5   3×3
25 ≠ 9

$\boxed{NO}$

13. $\frac{24}{54}, \frac{8}{18}$

$\boxed{YES}$

Solve each proportion.

14. $\dfrac{4}{r} = \dfrac{5}{20}$

$\dfrac{5r}{5} = \dfrac{80}{5}$

$\boxed{r = 16}$

15. $\dfrac{2}{9} = \dfrac{6}{k}$

$\dfrac{2k}{2} = \dfrac{54}{2}$

$\boxed{k = 27}$

16. $\dfrac{h}{35} = \dfrac{3}{7}$

$\dfrac{7h}{7} = \dfrac{105}{7}$

$\boxed{h = 15}$

17. $\dfrac{27}{30} = \dfrac{36}{x}$

$\dfrac{27x}{27} = \dfrac{1080}{27}$

$\boxed{x = 40}$

Set up a proportion to solve. Be your to answer the question with a complete sentence.

18. You can peel 4 potatoes in 10 minutes. How long will it take you to peel 14 potatoes?

$\dfrac{\text{potatoes}}{\text{min}}$ $\dfrac{4}{10} = \dfrac{14}{x}$ $\dfrac{4x}{4} = \dfrac{140}{4}$

$x = 35$

It will take you 35 minutes.

19. You can read 45 pages of your new book in 2 hours. How many pages can you read in 3 hours?

$\dfrac{\text{pgs}}{\text{hrs}}$ $\dfrac{45}{2} = \dfrac{x}{3}$ $\dfrac{2x}{2} = \dfrac{135}{2}$
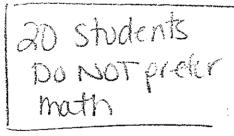
$x = 67.5$

you can read 67½ pages

20. Nine out of ten students prefer math class over lunch. How many students *do not* prefer math if 200 students were asked?

$\dfrac{9}{10}$ LIKE $\dfrac{1}{10} = \dfrac{x}{200}$ $\dfrac{10x}{10} = \dfrac{200}{10}$

$\dfrac{1}{10}$ DON'T LIKE   total → 10 $x = 20$

20 students Do NOT prefer math

21. You estimate that you can do 12 math problems in 45 minutes. How long should it take you to do 20 math problems?

$\dfrac{\text{problems}}{\text{min}}$ $\dfrac{12}{45} = \dfrac{20}{x}$ $\dfrac{12x}{12} = \dfrac{900}{12}$

$x = 75$

It would take 75 min.