CCSS • 7.RP.3

Percents Greater Than 100% and Less Than 1%

Name: _____	Date: _____	Score: _____ / 17

You have probably seen percents between 0 and 100, but guess what—percents can go *way* beyond that range! A percent greater than 100% means more than one whole, while a percent less than 1% describes only a tiny sliver of the whole. Converting these values to decimals or fractions helps you see their actual size. Once this clicks, the rest of percent problems will feel much more manageable!

Key Concepts & Quick Review

Percent → Decimal: divide by 100 (move decimal left 2 places). $250\% = 2.50$. $0.4\% = 0.004$.

Decimal → Percent: multiply by 100 (move decimal right 2 places). $3.75 = 375\%$. $0.006 = 0.6\%$.

Fraction → Percent: divide numerator by denominator, then $\times 100$.

Examples

① Convert each to a decimal and to a fraction in simplest form: (a) 350% (b) 0.25%

Think It Through: (a) $350\% \div 100 = 3.5$; as a fraction: $\frac{350}{100} = \frac{7}{2}$. (b) $0.25\% \div 100 = 0.0025$; as a fraction: $\frac{0.25}{100} = \frac{25}{10000} = \frac{1}{400}$.

Answer: *(a)* $3.5 = \frac{7}{2}$; *(b)* $0.0025 = \frac{1}{400}$

② A town's population grew from $4{,}000$ to $10{,}000$ people in ten years. Express the final population as a percent of the original population. Is this greater than or less than 100%? What does that tell you?

Think It Through: Ratio: $\frac{10{,}000}{4{,}000} = 2.5$. As a percent: $2.5 \times 100 = 250\%$. Greater than 100%: the new population is 2.5 times the original, meaning it grew by 150% (more than doubled).

Answer: 250% *of original; greater than* 100%

Practice Problems

Convert each percent to a decimal, or each decimal/fraction to a percent.

1. Convert 150% to a decimal. _____
2. Convert 225% to a decimal. _____
3. Convert 0.5% to a decimal. _____
4. Convert 0.08% to a decimal. _____
5. Convert 310% to a decimal. _____
6. Convert 0.75% to a decimal. _____
7. Convert the decimal 4.2 to a percent. _____
8. Convert the decimal 0.003 to a percent. _____
9. Convert the decimal 1.85 to a percent. _____
10. Convert the decimal 0.0015 to a percent. _____

11. Convert 500% to a decimal.

_____

12. Convert 0.1% to a decimal.

_____

13. Convert the decimal 2.6 to a percent.

_____

14. Convert the decimal 0.004 to a percent.

_____

15. Convert the fraction $\frac{7}{4}$ to a percent.

_____

Study Tips

- Moving the decimal **left two places** converts percent to decimal; moving **right two places** converts decimal to percent. Never skip this step.
- A percent $> 100\%$ means the part is **larger than the whole**. For example, 150% of 40 means $1.5 \times 40 = 60$.
- A percent $< 1\%$ is **very small**. Write 0.5% as 0.005 before computing — extra zeros are easy to lose track of.

Word Problems

16. A pharmaceutical company reports that a new drug is effective in 0.8% of trial participants. Express 0.8% as a decimal and as a fraction. If $5{,}000$ people participated in the trial, how many showed effectiveness?

_____

17. A factory produced 600 parts last month and 900 parts this month. Write this month's production as a percent of last month's production. Then express the *increase* as a percent of last month's total. Are either of these percentages greater than 100%?

_____

Answer Keys

1) 1.5
2) 2.25
3) 0.005
4) 0.0008
5) 3.1
6) 0.0075
7) 420%
8) 0.3%
9) 185%
10) 0.15%
11) 5
12) 0.001
13) 260%
14) 0.4%
15) 175%
16) 40 people
17) This month 150%; increase 50%

Step-by-Step Explanations

Strategy: For Ratios and Equivalent Ratios, reduce both parts by the same factor or scale both parts by the same factor; the comparison must stay balanced. A clear ratio table keeps the pair order steady and makes scale-factor mistakes easier to catch.

Practice 1: $\frac{6}{9} =$ **Answer:** $\frac{2}{3}$

In the first example, reduce the ratio by the greatest common factor so both parts shrink together.

Practice 15: $\frac{1}{3} = \frac{?}{15}$ **Answer:** 5

Toward the end, scale the denominator from 3 to 15, then use that same factor on the numerator.

Word-problem notes:

16. Answer: $\frac{4}{7} = \frac{?}{280}$; $? = 160$ students prefer math.

Match the ratio in the same order both times: math over English. That gives $\frac{4}{7} = \frac{x}{280}$. You can solve by thinking with scale factors or by cross-multiplying. Since $7 \times 40 = 280$, the English group was multiplied by 40, so the math group must also be multiplied by 40: $4 \times 40 = 160$. So 160 students prefer math.

17. Answer: Ratio: $\frac{3}{45} = \frac{1}{15}$; $120\,km = 8\,cm$ on the map.

First simplify the scale ratio $3{:}45$. Divide both parts by 3 to get $1{:}15$, which means 1 centimeter stands for 15 kilometers. Now ask: how many groups of 15 are in 120? Since $120 \div 15 = 8$, the map distance is $8\,cm$. Once the scale is in simplest form, the comparison becomes much easier to use.

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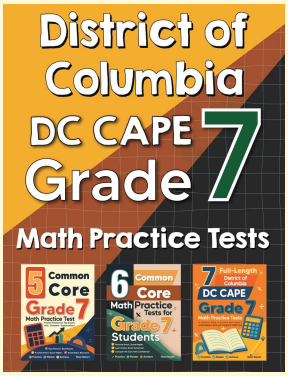

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