

Percents: practice solutions, Grade 6 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Reading a hundred grid



(a) 42 of the 100 squares are colored, so **42%** of the grid is colored.

(b) $42\% = \frac{42}{100} = 0.42$.

(c) $100 - 42 = 58$ squares are not colored, so **58%** is not colored.

2 Percent to fraction and decimal



(a) $9\% = \frac{9}{100} = 0.09$.

(b) $50\% = \frac{50}{100} = 0.5$.

(c) $75\% = \frac{75}{100} = 0.75$.

(d) $120\% = \frac{120}{100} = 1.2$. It is more than one whole.

3 Easy fractions



- (a) $\frac{1}{2} = \frac{50}{100} = 50\%$.
- (b) $\frac{1}{4} = \frac{25}{100} = 25\%$.
- (c) $\frac{3}{10} = \frac{30}{100} = 30\%$.
- (d) $\frac{4}{5} = \frac{80}{100} = 80\%$.

4 Free throws



- (a) $\frac{18}{20} = \frac{90}{100} = 90\%$. She made 90% of her free throws.
- (b) $\frac{12}{25} = \frac{48}{100} = 48\%$. The second player made 48%.

5 Ten percent shortcut



Dividing by 10 gives 10%.

- (a) $70 \div 10 = 7$. (b) $120 \div 10 = 12$. (c) $45 \div 10 = 4.5$. (d) $8 \div 10 = 0.8$.

20% is twice 10%, so 20% of 70 is $2 \times 7 = 14$.

6 True or false?



- (a) False. $0.3 = 0.30 = 30\%$, not 3%.
- (b) True. $\frac{1}{4} = \frac{25}{100}$.
- (c) True. $150\% = 1.5$, which is greater than 1.
- (d) False. $5\% = \frac{5}{100} = 0.05$.

7 Order the numbers



Convert all to decimals: 0.4 ; $35\% = 0.35$; $\frac{3}{5} = 0.6$; $\frac{1}{2} = 0.5$.

Order: $0.35 < 0.4 < 0.5 < 0.6$. So the order is 35% , 0.4 , $\frac{1}{2}$, $\frac{3}{5}$.

8 Percent of a number



(a) $0.25 \times 84 = 21$ (a quarter of 84).

(b) $0.6 \times 55 = 33$.

(c) 10% of 120 is 12, so 5% is 6.

(d) $0.35 \times 200 = 70$.

9 A day on the trail



$75\% = \frac{3}{4}$. A quarter of 12 is 3, so three quarters is $3 \times 3 = 9$.

Tomás has hiked 9 miles (about 14.5 km). Left: $12 - 9 = 3$ miles.

10 Trail mix



Raisins: $0.30 \times 250 = 75$ g.

Everything else: $250 - 75 = 175$ g, which is 70% of the bag.

The raisins weigh 75 g and the rest weighs 175 g.

11 Harder fractions



(a) $\frac{9}{25} = \frac{36}{100} = 36\%$.

(b) $3 \div 8 = 0.375 = 37.5\%$.

(c) $7 \div 40 = 0.175 = 17.5\%$.

12 Minutes on a tape diagram



(a) 4 of 10 equal parts is $\frac{4}{10} = 40\%$.

(b) $0.4 \times 90 = 36$ minutes.

(c) $90 \div 10 = 9$ minutes per part, and $4 \times 9 = 36$ agrees with (b).

13 Sales tax



Tax: $0.08 \times 50 = 4$ dollars.

Total: $50 + 4 = 54$ dollars.

The headphones cost \$54 in all.

14 Jacket on sale



Discount: $0.20 \times 70 = 14$ dollars.

Sale price: $70 - 14 = 56$ dollars. Check: you pay 80%, and $0.8 \times 70 = 56$.

15 Who is right?



45% of 60 = $0.45 \times 60 = 27$.

60% of 45 = $0.6 \times 45 = 27$.

Both are 27, so Mia is wrong: they are equal. (Multiplication can be done in either order.)

16 Finding the whole



(a) 25% is a quarter, so the whole is $9 \times 4 = 36$.

(b) 60% is 6 parts of 10. One part is $21 \div 6 = 3.5$, so the whole is $10 \times 3.5 = 35$. Check: $0.6 \times 35 = 21$.

(c) 20% is 2 parts of 10. One part is $15 \div 2 = 7.5$, so the whole is 75. Check: $0.2 \times 75 = 15$.

17 The school band



30% is 3 parts out of 10 equal parts. Three parts hold 72 students, so one part is $72 \div 3 = 24$.

The whole school is $10 \times 24 = 240$ students. Check: $0.3 \times 240 = 72$.

18 Saving for a stand



(a) $100\% \div 5 = 20\%$ per part. (Three parts: $3 \times 20\% = 60\%$, as given.)

(b) $45 \div 3 = 15$ dollars per part.

(c) $5 \times 15 = 75$ dollars. The stand costs \$75.

19 The original price



The sale price is $100\% - 25\% = 75\%$ of the original price.

$75\% = 3$ parts of 4, so one part (25%) is $27 \div 3 = 9$ dollars, and the original price is $4 \times 9 = 36$ dollars.

Check: $0.75 \times 36 = 27$. The discount was \$9.

20 Over 100 percent



- (a) $1.5 \times 8 = 12$, so it is 12 cm tall.
- (b) $1.2 \times 250 = 300$, so the new price is \$300.
- (c) $1.25 \times 40 = 50$. (Or: $100\% = 40$ and $25\% = 10$, total 50.)

21 Who did better?



Jordan: $\frac{34}{40} = 0.85 = 85\%$.

Sam: $\frac{21}{25} = \frac{84}{100} = 84\%$.

$85\% > 84\%$, so Jordan did slightly better.

22 Fruit survey



- (a) 25% of 120: $0.25 \times 120 = 30$ students.
- (b) 40% of 120: $0.4 \times 120 = 48$ students.
- (c) Grape: $0.2 \times 120 = 24$. Orange: $0.15 \times 120 = 18$. So orange was chosen by 18 students.

23 Find the mistake



- (a) Dev divided by 20. But 20% means $\frac{20}{100} = 0.2$, so he should multiply 50 by 0.2 (or divide by 5).
- (b) $0.2 \times 50 = 10$. Also 10% of 50 is 5, and 20% is double: 10. Both give 10.



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