

Percent Applications: practice solutions, Grade 7 – download the PDF

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

1 Percent of a number



$25\% = 0.25$, so $0.25 \times 180 = 45$.

Answer: 45 students.

2 Percents and decimals



a) $7\% = \frac{7}{100} = 0.07$.

b) $0.4 = 0.40 = 40\%$.

c) $3 \div 8 = 0.375 = 37.5\%$.

d) $0.12 \times 50 = 6$.

3 Up 10%, down 10%



10% of 60 is 6 pounds.

Increase: $60 + 6 = 66$ pounds. Decrease: $60 - 6 = 54$ pounds.

4

Sneaker sale

Discount: $0.25 \times 80 = 20$ dollars.

Sale price: $80 - 20 = 60$ dollars.

Answer: The sneakers cost \$60 on sale.

5

Book with tax

Tax: $0.08 \times 25 = 2.00$ dollars.

Total: $25 + 2 = 27$ dollars.

Answer: \$27.00.

6

Tipping at dinner

10% of 40 is 4. So 20% is $2 \times 4 = 8$ dollars, and 15% is $4 + 2 = 6$ dollars.

Check: $0.15 \times 40 = 6$. **Answer:** \$6 and \$8.

7

A small savings account

$I = Prt = 500 \times 0.03 \times 2 = 30$ dollars.

Balance: $500 + 30 = 530$ dollars.

Answer: \$30 of interest, \$530 in all.

8

Find the percent increase

Change: $52 - 40 = 12$.

$\frac{12}{40} = 0.30 = 30\%$.

Answer: a 30% increase.

9**Find the percent decrease**

Change: $250 - 200 = 50$.

$$\frac{50}{250} = 0.20 = 20\%.$$

Answer: a 20% decrease (divide by the original price, 250).

10**Store markup**

Markup: $0.45 \times 36 = 16.20$ dollars.

Selling price: $36 + 16.20 = 52.20$ dollars.

Answer: \$52.20.

11**Tax on a purchase**

Tax: $0.065 \times 120 = 7.80$ dollars.

Total: $120 + 7.80 = 127.80$ dollars.

Shortcut: $1.065 \times 120 = 127.80$.

12**Salesperson pay**

Commission: $0.08 \times 9500 = 760$ dollars.

Total pay: $400 + 760 = 1160$ dollars.

Answer: \$1,160.

13 Measuring a ruler



Error: $|9.6 - 10| = 0.4$.

$$\frac{0.4}{10} = 0.04 = 4\%.$$

Answer: the percent error is 4%.

14 Monthly sales chart



Jan to Feb: $\frac{50 - 40}{40} = 0.25$, a 25% increase.

Feb to Mar: $\frac{50 - 45}{50} = 0.10$, a 10% decrease.

Mar to Apr: $\frac{54 - 45}{45} = 0.20$, a 20% increase.

Each time we divide by the earlier month's value.

15 Find the original price



The sale price is 70% of the original: $0.70 \times p = 42$.

$$p = 42 \div 0.70 = 60.$$

Check: 30% of 60 is 18, and $60 - 18 = 42$. **Answer:** \$60.

16 Up 20%, then down 20%



Up 20%: $50 \times 1.20 = 60$.

Down 20% of 60: $60 \times 0.80 = 48$.

The final price is \$48, not \$50. Net change: $\frac{48 - 50}{50} = -0.04$, a 4% decrease. The 20% decrease is taken from a larger number, so it removes more.

17 How long was the deposit?



$$I = Prt, \text{ so } 360 = 2000 \times 0.045 \times t = 90t.$$

$$t = 360 \div 90 = 4.$$

Answer: 4 years.

18 Find the interest rate



$$216 = 1200 \times r \times 3 = 3600r.$$

$$r = 216 \div 3600 = 0.06.$$

Answer: 6% per year.

19 Restaurant total



$$\text{Tax: } 0.08 \times 55 = 4.40. \text{ Tip: } 0.18 \times 55 = 9.90.$$

$$\text{Total: } 55 + 4.40 + 9.90 = 69.30 \text{ dollars.}$$

Answer: \$69.30.

20 Two-tier commission



$$\text{First part: } 0.05 \times 4000 = 200 \text{ dollars.}$$

$$\text{Sales above 4,000: } 7500 - 4000 = 3500. \text{ Commission: } 0.08 \times 3500 = 280 \text{ dollars.}$$

$$\text{Total: } 200 + 280 = 480 \text{ dollars. Answer: } \$480.$$

21 Which scale is better?



Scale A: $\frac{|148 - 160|}{160} = \frac{12}{160} = 0.075 = 7.5\%$.

Scale B: $\frac{|157 - 160|}{160} = \frac{3}{160} = 0.01875 \approx 1.9\%$.

Answer: scale B is more accurate, because its percent error is smaller.

22 Card fee



Percent fee: $0.029 \times 50 = 1.45$. Flat fee: 0.30.

Total fee: $1.45 + 0.30 = 1.75$ dollars.

Store keeps: $50 - 1.75 = 48.25$ dollars. **Answer:** \$48.25.



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