

Grade 7 · Percent Increase, Percent Decrease and Percent Error · Test Answer Key

Common Core 7.RP.A.3 · mathovore.fr

Use these worked solutions and scoring guides to grade the test out of 20 points. Partial credit is given for a correct setup, such as dividing by the original amount, even when an arithmetic slip follows.

Grade 7 Common Core: 7.RP.A.3

Question 1: Classify the change (2 points)

- a. $\frac{52-40}{40} = \frac{12}{40} = 0.30$. **A 30% increase.**
b. $\frac{60-75}{75} = \frac{-15}{75} = -0.20$. **A 20% decrease.**

Scoring: 1 point for each part: correct percent and the correct word (increase or decrease).

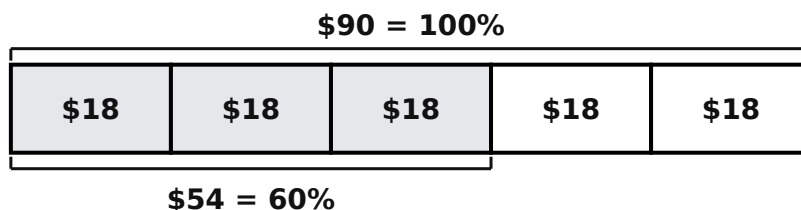
Question 2: New amounts (2 points)

- a. $0.15 \times 120 = 18$; $120 + 18 = 138$. **\$138.**
b. $0.25 \times 64 = 16$; $64 - 16 = 48$. **48 pounds.**

Scoring: 1 point for each part. Award the point for a correct multiplier method (1.15 or 0.75) as well.

Question 3: Original price (2 points)

The sale price is $100\% - 40\% = 60\%$ of the original: $0.60 \times \text{original} = 54$, so $\text{original} = 54 \div 0.60 = 90$.



Each block is 20% of the original.

Check: 40% of \$90 is \$36 and $90 - 36 = 54$. **The original price was \$90.**

Scoring: 1 point for writing 54 as 60% of the original (or an equivalent equation); 1 point for

the correct original price.

Question 4: Percent error (3 points)

- a. $|78.4 - 80| = 1.6$ inches.
- b. $\frac{1.6}{80} = 0.02 = 2\%$.
- c. Board: $\frac{|25.75 - 25|}{25} = \frac{0.75}{25} = 0.03 = 3\%$. Since 2% is less than 3%, **the countertop measurement has the smaller percent error.**

Scoring: 1 point for the error 1.6 in; 1 point for dividing by the actual length and getting 2%; 1 point for finding 3% and comparing correctly.

Question 5: Up then down (3 points)

- a. $1.25 \times 48 = 60$. **\$60.**
- b. $0.80 \times 60 = 48$. **\$48.**
- c. The price is back at \$48, a change of 0%. The 25% was taken of \$48 (\$12) but the 20% was taken of the larger amount \$60 (also \$12), so the percents are of different amounts and cannot be added or subtracted.



Both changes are worth \$12, so the price returns to \$48.

Scoring: 1 point each for parts (a) and (b); 1 point for an explanation that the percents apply to different base amounts (or that the final price equals the starting price).

Question 6: Population (2 points)

Change: $12,500 - 11,000 = 1,500$. $\frac{1,500}{12,500} = 0.12 = 12\%$.

A 12% decrease.

Scoring: 1 point for the change 1,500 divided by the original 12,500; 1 point for 12% decrease.

Question 7: Compare growth (3 points)

- a. Plant A: $\frac{10 - 8}{8} = \frac{2}{8} = 25\%$. Plant B: $\frac{24 - 20}{20} = \frac{4}{20} = 20\%$.
- b. $25\% > 20\%$, so **Plant A grew by the greater percent**, even though Plant B grew by more inches.

Scoring: 1 point for each correct percent; 1 point for the correct comparison.

Question 8: Discount and tax (3 points)

- a. $0.80 \times \text{original} = 44$, so $\text{original} = 44 \div 0.80 = 55$. **\$55.**
b. Tax: $0.07 \times 44 = 3.08$. Total: $44 + 3.08 = 47.08$. **\$47.08.**
c. $\frac{47.08 - 55}{55} = \frac{-7.92}{55} = -0.144$. **A 14.4% decrease.**

Scoring: 1 point for each part. In (c), accept a 14.4% decrease; do not penalize a rounding to 14% if the work is shown.

Total
20 points