MATHEMATICS · GRADES 7-9

Percentage change

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you compare a rise or a fall fairly, like whether a 10 dollar raise matters more on a small wage or a big one. Ten dollars on a small wage is a big change, and the same ten dollars on a large wage barely registers, so the dollar amount alone does not tell the story. A shop comparing two price rises, or a student comparing two test score improvements, needs the percentage to judge them fairly. Percentage change is what lets you compare changes that start from different places.



Rule

$$\text{Percent change} = \frac{\text{change}}{\text{starting value}} \times 100.$$

Find the change first, then divide by the value you started from, never the new value.

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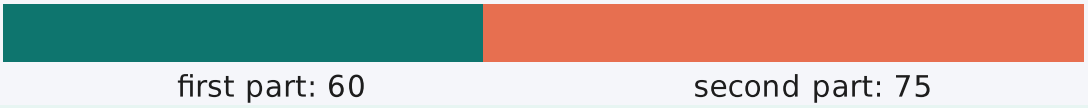
Worked examples

EXAMPLE 1

Q A value changes from 60 to 75. Find the percentage change.

Picture it



SOLUTION

Picture it

first part: 60 second part: 75

Find the change: 75 − 60 = 15

Divide by the starting value: 15 ÷ 60 = 0.25

0.25 × 100 = 25

25 percent increase.

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EXAMPLE 2

Q A value changes from 120 to 96. Find the percentage change.

Picture it



first part: 120 second part: 96

SOLUTION

Picture it

first part: 120 second part: 96

Find the change: 120 − 96 = 24

Divide by the starting value: 24 ÷ 120 = 0.20

0.20 × 100 = 20

20 percent decrease.

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Practice questions

1 A shirt cost $80 and now costs $100. Find the percentage change.

- **A** 25% increase
- **B** 20% increase
- **C** 25% decrease
- **D** 20% decrease

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2 A bus had 50 seats and now has 40 seats. Find the percentage change.

- **A** 20% increase
- **B** 25% decrease
- **C** 20% decrease
- **D** 10% decrease

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3 A town had 200 people and now has 220 people. Find the percentage change.

- **A** 20% increase
- **B** 10% increase
- **C** 10% decrease
- **D** 25% increase

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4 A jacket was $90 and is now $72. Find the percentage change.

- **A** 25% decrease
- **B** 20% decrease
- **C** 20% increase
- **D** 10% decrease

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5 A plant was 40 cm tall and is now 50 cm tall. Find the percentage change.

- A 20% increase
- B 25% decrease
- C 30% increase
- D 25% increase

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6 A pair of shoes was $60 and is now $75. Find the percentage change.

- A 25% decrease
- B 25% increase
- C 20% increase
- D 15% increase

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7 A price increases by 20%. The new price is $120. What was the old price?

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8 A price goes up by 50% and then down by 50%. Why does it not end up back where it started?

A. The two percentages cancel out, so it ends back at 100

B. The decrease acts on the bigger new value, so 100 becomes 150 then 75, not 100

C. The decrease acts on the original value, so 100 becomes 150 then 100

D. The increase is bigger than the decrease, so it ends at 125

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9 Three price changes are listed: A goes from 50 to 60, B goes from 80 to 100, and C goes from 40 to 44. Which one is the largest percentage increase?

- **A** A
- **B** B
- **C** C
- **D** D

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10 Four changes are listed. Three are the same percentage increase and one is different. Which one is different?

- **A** 80 to 100
- **B** 60 to 75
- **C** 40 to 50
- **D** 50 to 65

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ANSWER KEY

1. 25% increase

2. 20% decrease

3. 10% increase

4. 20% decrease

5. 25% increase

6. 25% increase

7. 100

8. The decrease acts on the bigger new value, so 100 becomes 150 then 75, not 100

9. B

10. 50 to 65

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