

Mastering ACT Math Percentages

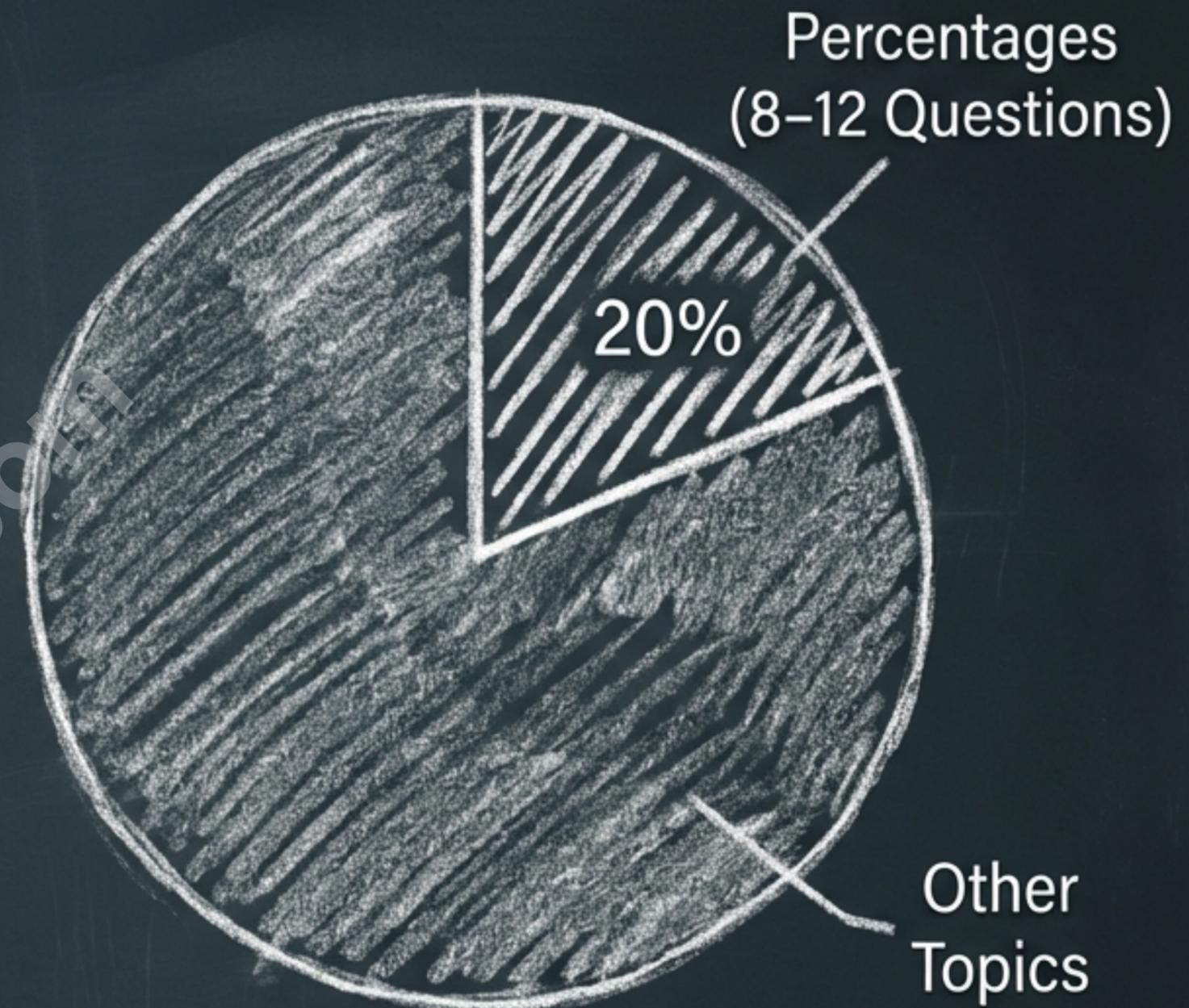
The Score Booster Guide

**Value:
+2-4 Points
on your Score!**

Based on the guide by Irfan Mansuri, ACT Test Prep Specialist

****Why This Matters****

- **High Frequency:** 8–12 questions per test.
- **Cross-Category:** Essential for Pre-Algebra, Algebra, & Geometry.
- **Foundation Skill:** Required for advanced growth problems.



The “low-hanging fruit” of the ACT. Mastering this single concept can jump your Math subscore by 2–4 points.

The Language of Percentages

$$\text{Part} = \text{Percent} \times \text{Whole}$$

'Per Centum' = Per Hundred

$$45\% = \frac{45}{100} = 0.45$$

$$8\% = \frac{8}{100} = 0.08$$

$$125\% = \frac{125}{100} = 1.25$$

PRO TIP: ALWAYS
convert to decimals
immediately!

25% → 0.25.

This is the first
step to speed.

Core Formulas

INCREASE (+)

$$\text{New Value} = \text{Original} \times (1 + \text{Percent Decimal})$$

Tax, Markups,
Population Growth

DECREASE (-)

$$\text{New Value} = \text{Original} \times (1 - \text{Percent Decimal})$$

Discounts, Sales,
Decay

Memorize these. They are your primary tools.

The Golden Rule: Use Multipliers

Don't Do This

~~Step 1: $100 \times 0.15 = 15$.~~
~~Step 2: $100 + 15 = 115$.~~

Do THIS

$100 \times 1.15 = 115$

Increase by 15% $\rightarrow \times 1.15$
Decrease by 30% $\rightarrow \times 0.70$

Permanent Marker
This saves ~30
seconds per
question.
On the ACT, time
is points.

The "Death Trap": Sequential Changes



You CANNOT simply add or subtract percentages that happen one after another.



Result: \$96 (NOT \$100!)

$$120 \times 0.80 = 96$$

The base value changes at every step!

Guided Example: Basic Calculation

A store has 240 items in stock. If 35% are on sale, how many items are on sale?

Solution

1. Identify: Whole = 240.
Percent = 35%.
2. Convert:
 $35\% \rightarrow 0.35$
3. Calculate:
 $0.35 \times 240 = 84$

ACT Time
Target:
30-45
seconds.

Guided Example: The "Shortcut" Chain

Jacket is \$120. Sale is 40% off. Tax is 8% on the sale price.

The Slow Way

$$120 \times 0.40 = 48$$

$$120 - 48 = 72$$

$$72 \times 0.08 = 5.76$$

$$72 + 5.76 = 77.76$$

The ACT Pro Way

$$120 \times 0.60 \times 1.08 = 77.76$$

Discount
Multiplier

Tax
Multiplier

We combined the Discount and Tax into one fast line.

ACT Time
Target: 30-
45 seconds.

Patrick Hand SC Common Mistakes Checklist

Forgot to Convert:
Using 25 instead
of 0.25 will ruin
your answer.
Permanent Marker

Points vs. Percent:
Moving from 60% to
80% is a 20 point
jump, but a 33.3%
percent increase.
Permanent Marker

Wrong Base:
For % Increase,
always divide by the
ORIGINAL value,
not the New value.
Permanent Marker

Rounding Early:
Keep 2-3
decimal places
until the final
answer.
Permanent Marker

Word Problem Translation Guide

$$\frac{\text{Is}}{\text{Of}} = \frac{\text{Percent}}{100}$$

Translation Dictionary

English	→	Math
What	→	×
Is	→	=
Of	→	× (Multiply)

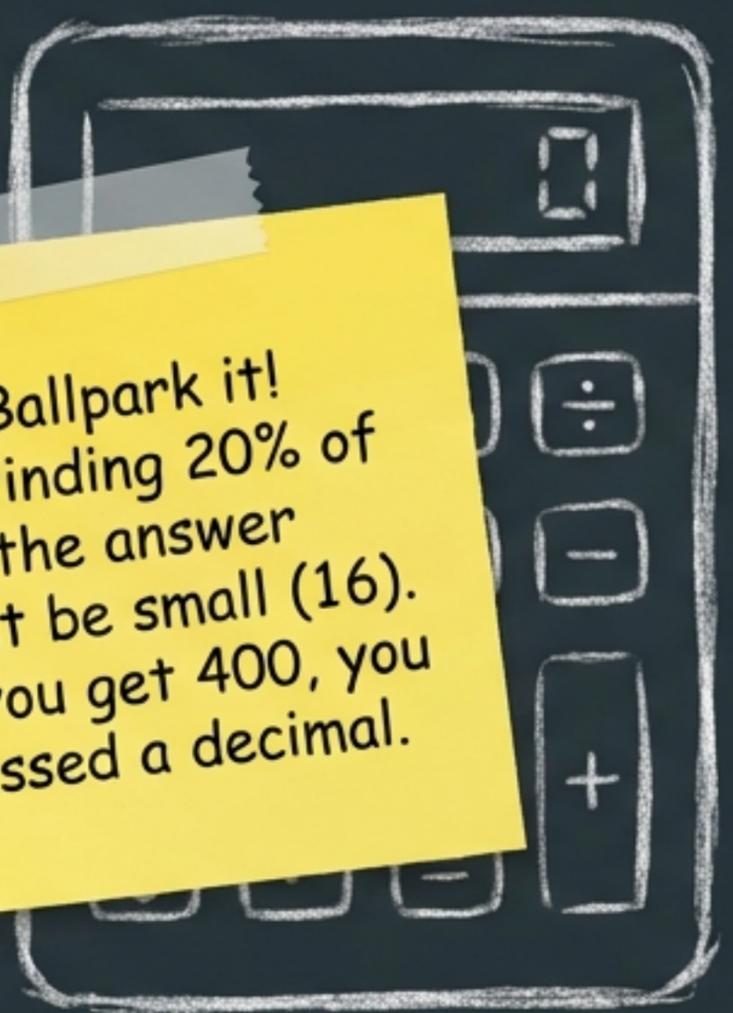
Example

What is 40% of 250?

$$x = 0.40 \times 250$$

Speed Strategy & Calculator Tips

- Mental Math Zone: Use for 10%, 25%, 50%.
- Calculator Zone: Use for complex multipliers ($\times 1.08$) and division.



Ballpark it!
If finding 20% of 80, the answer must be small (16).
If you get 400, you missed a decimal.

Rule: If a problem takes >90 seconds, mark it and move on.

Practice Challenge

1. (Basic) A student got 42 out of 60 correct. What percent is this?
2. (Intermediate) Gas price went from \$3.20 to \$4.00. What is the percent increase?
3. (Advanced) Item is \$50. Price increases 20%, then new price decreases 20%. What is the final price?

Try these now. Answers on next slide.



Solutions & Logic

1. Answer: 70%.

- $42 \div 60 = 0.70$

2. Answer: 25%.

- Change is 0.80. Divide by ORIGINAL 3.20. ($0.80 \div 3.20 = 0.25$)

3. Answer: \$48.

- $50 \times 1.20 \times 0.80 = 48$

Did you fall for
the \$50 trap?
Sequential
changes multiply,
they don't add!

Your 2-Week Battle Plan

Week 1: Basics & Accuracy

- Practice conversions ($1/5 = 0.20$).
- Goal: 90%+ Accuracy.

Week 2: Complexity & Speed

- Multi-step word problems.
- Goal: Under 60 seconds.

Resources:
Official ACT
Practice Tests
(Questions 1-40)
& Khan Academy.

Summary: The Top 3 Takeaways

1. Always Convert percentages to decimals immediately.
2. Chain It: Use multipliers (1.20×0.80) for sequential changes.
3. Watch the Base: Percent increase is always divided by the original number.

You are ready. Go get those +2-4 points!

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