CCSS • 7.RP.3

# Tips, Commissions, and Fees

| Name: _____ | Date: _____ | Score: _____ / 17 |
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Tips, commissions, and fees look different on the surface, but under the hood they all work the same way—each one is a *percent of some base amount*. A tip is a percent of your restaurant bill, a commission is a percent of a salesperson's total sales, and a fee is a percent of a ticket price or service charge. Once you can spot the base and the rate, the calculation is simple multiplication. This topic connects percent skills directly to the money decisions you will make every day!

## Key Concepts & Quick Review

**Tip:** Tip $=$ Bill $\times\, r$; Total $=$ Bill $\times\, (1 + r)$.
**Commission:** Commission $=$ Sales $\times\, r$; Total earnings $=$ Base salary $+$ Commission.
**Fee:** Fee $=$ Service cost $\times\, r$; Total $=$ Cost $\times\, (1 + r)$.

## Examples

① A restaurant bill is $\$64.50$. The customer leaves an $18\%$ tip. Find the tip amount and the total paid.

**Think It Through:** Tip: $64.50 \times 0.18 = \$11.61$. Total: $64.50 + 11.61 = \$76.11$. Or: $64.50 \times 1.18 = \$76.11$.

**Answer:** *Tip:* $\$11.61$; *total:* $\$76.11$

② A real estate agent earns a $3\%$ commission on home sales. She also has a base salary of $\$2{,}000$ per month. In April she sold homes worth $\$380{,}000$ total. What were her total earnings for April?

**Think It Through:** Commission: $380{,}000 \times 0.03 = \$11{,}400$. Total: $2{,}000 + 11{,}400 = \$13{,}400$.

**Answer:** *Total earnings:* $\$13{,}400$

## Practice Problems

*Calculate the tip, commission, or fee. Then find the total amount paid or earned.*

1. A restaurant bill is \$40. Find the tip for a $20\%$ tip rate. _____

2. A restaurant bill is \$85. Find the tip for a $15\%$ tip rate. _____

3. A restaurant bill is \$120. Find the tip for an $18\%$ tip rate. _____

4. A restaurant bill is \$55. Find the tip for a $22\%$ tip rate. _____

5. A salesperson makes \$200 in sales and earns $10\%$ commission. Find the commission. _____

6. A salesperson makes \$1,500 in sales and earns $6\%$ commission. Find the commission. _____

7. A salesperson makes \$4,000 in sales and earns $8\%$ commission. Find the commission. _____

8. A salesperson makes \$75,000 in sales and earns $3\%$ commission. Find the commission. _____

9. A \$300 fee has an added $5\%$ service fee. Find the service fee. _____

10. A \$180 service has an added $12\%$ fee. Find the fee amount. _____

11. A restaurant bill is \$95. Find the tip for a $25\%$ tip rate. _____

12. A rental costs \$600 and has a $2\%$ booking fee. Find the booking fee. _____

13. A worker earns \$2,500 salary plus $9\%$ commission on \$8,000 in sales. Find total earnings. _____

14. A worker earns \$1,200 salary plus $5\%$ commission on \$15,000 in sales. Find total earnings. _____

15. A restaurant bill is \$50 before tax and tip. Add $9\%$ tax and a $20\%$ tip on the original bill. Find the total paid. _____

## Study Tips

- **Mental math trick for tips:** Find $10\%$ first (move decimal left one place), then adjust. A $20\%$ tip $= 2 \times (10\%$ tip$)$.
- Commission is calculated on **total sales**, not on salary. Add the commission to the base salary to find total earnings.
- When a **fee and tax** both apply, apply them to the appropriate base — a booking fee applies to the original cost, and tax may apply to the total.

## Word Problems

16. Four friends share a restaurant meal. The bill before tax is $\$96$. They add $8\%$ sales tax and then leave a $20\%$ tip on the *pre-tax* amount. What is the total bill? If they split it equally, how much does each person pay? Round to the nearest cent. _____

17. A car salesperson earns a base salary of $\$2{,}500$ per month plus a $4\%$ commission on all car sales. In May she sold $3$ cars worth $\$28{,}000$, $\$34{,}500$, and $\$19{,}200$. Calculate her commission on each car, her total commission, and her total earnings for May. _____

# Answer Keys

**1)** $8.00
**2)** $12.75
**3)** $21.60
**4)** $12.10
**5)** $20.00
**6)** $90.00
**7)** $320.00
**8)** $2,250.00
**9)** $15.00
**10)** $21.60
**11)** $23.75
**12)** $12.00
**13)** $3,220.00
**14)** $1,950.00
**15)** $64.50
**16)** Tax: $\$7.68$; tip: $\$19.20$; total: $\$122.88$; per person: $\$30.72$.
**17)** Commissions: $\$1{,}120$, $\$1{,}380$, $\$768$; total comm.: $\$3{,}268$; total earnings: $\$5{,}768$.

## Step-by-Step Explanations

**Strategy:** For Scale Drawings and Scale Factors, decide whether you are moving from drawing to actual size or actual size back to drawing size before multiplying or dividing. Scale drawings get much easier when students label the direction of the scale first.

**Practice 1:** On a scale drawing, $1\ cm$ represents $10\ m$. Find the actual distance represented by $4\ cm$.
**Answer:** $40\ m$
For the first sample, multiply the drawing length by the scale value attached to each centimeter.

**Practice 15:** On a scale drawing, $1\ cm$ represents $6\ km$. Find the actual distance represented by $7.5\ cm$.
**Answer:** $45\ km$
Late in the set, keep the scale unit visible: $7.5$ drawing centimeters each stand for $6$ kilometers.

**Word-problem notes:**

**16. Answer:** Actual: $14\ ft \times 11\ ft$; area $= 154\ sq\ ft$.
The scale says $\frac{1}{4}$ inch represents $1$ foot, so $1$ inch represents $4$ feet. That means we multiply each drawing measurement by $4$. The length is $3.5 \times 4 = 14$ feet, and the width is $2.75 \times 4 = 11$ feet. Now find the actual area: $14 \times 11 = 154$ square feet. Always convert the dimensions first, then find the area using the real measurements.

**17. Answer:** Trail: $29.4\ km$; station: $6\ cm$; time: $7.35\ hr$.
To find the actual trail length, multiply the map length by the scale factor: $8.4 \times 3.5 = 29.4\ km$. To find the ranger station's distance on the map, go the opposite direction and divide: $21 \div 3.5 = 6\ cm$. For hiking time, use time $=$ distance $\div$ speed, so $29.4 \div 4 = 7.35$ hours. This problem combines scale drawings with rate reasoning, so it helps to solve one question at a time.

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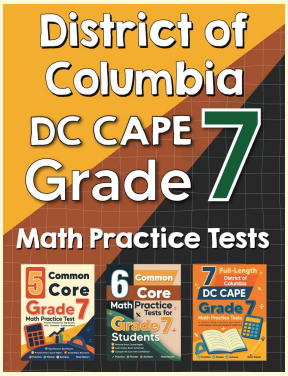


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