GRADE 7 · UNIT 7 · LESSON 6

Determining Tax, Tip, or Fees Given a Percentage

MA.7.AR.3.1

I can find a tax, a tip or a fee from its percent, and the total, two ways — and find the percent when I know the amounts.

Warm-Up

1. A $70 jacket is 30% off. What is the sale price?
2. What central angle shows 85% of a circle graph?
3. Plan 3.5 in., scale 1 in. : 8 ft. Real length?
4. Find the value: $0.08 \cdot 35$

Warm-Up

1. A $70 jacket is 30% off. What is the sale price? **$49**
2. What central angle shows 85% of a circle graph? **306°**
3. Plan 3.5 in., scale 1 in. : 8 ft. Real length? **28 ft**
4. Find the value: $0.08 \cdot 35$ **2.8**

Vocabulary

sales tax

a percent of a price that is added to it when you buy something

tip

an amount added to a bill for the service, usually a percent of the bill

fee

a charge for a service; some fees are a percent of a price

subtotal

the amount before a tax, a tip or a fee is added

total

the amount paid in all: the subtotal plus the tax, tip or fee

Notes

I. The charge, then the total

A $36 dinner has a 7% sales tax.

Route 1, add the charge: $0.07 \cdot 36 = 2.52$ and $36 + 2.52 = 38.52$

Route 2, multiply by 1.07: $1.07 \cdot 36 = 38.52$

1.07 is 100% of the price and 7% more: 107%.

The total is $38.52 either way.

Notes

II. Decimals in the rate

The percent sign means divide by 100.

$$6.5\% = 6.5 \div 100 = 0.065$$

$$7.25\% = 0.0725 \qquad 43.5\% = 0.435$$

43.5% is not 43.5: the percent sign still means divide by 100.

A 6.5% tax on \$24: $0.065 \cdot 24 = 1.56$

Notes

III. Find the percent; find the cost

A $9 tip on a $60 bill: part ÷ whole.

$$9 \div 60 = 0.15 = 15\%$$

Not 60 ÷ 9: the bill is the whole.

A fee is 70% of an item's cost, and the fee is $73.50.

$0.70c = 73.50$, so $c = 73.50 \div 0.70 = 105$: the item cost $105.

Example 1

A car repair costs $84 before a 6.5% sales tax.

Find the tax and the total.

Example 1

Tax: 6.5% is 0.065.

$$0.065 \cdot 84 = 5.46$$

Total, route 1: add the tax.

$$84 + 5.46 = 89.46$$

Or, route 2: multiply by 1.065.

$$1.065 \cdot 84 = 89.46$$

Answer: Tax $5.46; total $89.46

Your Turn

A car repair costs $72 before a 7.5% sales tax.

Find the tax and the total.

Your Turn

A car repair costs $72 before a 7.5% sales tax.

Find the tax and the total.

Tax: $7.5\% = 0.075$, and $0.075 \cdot 72 = 5.40$

Total: $72 + 5.40 = 77.40$, or $1.075 \cdot 72 = 77.40$

Answer: Tax $5.40; total $77.40

Example 2

A $48 dinner bill gets an $8.64 tip.

What percent of the bill is the tip?

Example 2

Part ÷ whole: the tip ÷ the bill.

$$8.64 \div 48 = 0.18$$

$$0.18 \cdot 100 = 18$$

Answer: The tip is 18% of the bill

Your Turn

A $45 lunch bill gets a $7.65 tip.

What percent of the bill is the tip?

Your Turn

A $45 lunch bill gets a $7.65 tip.

What percent of the bill is the tip?

Part ÷ whole: $7.65 \div 45 = 0.17$

$0.17 \cdot 100 = 17$, so the tip is 17%

Answer: 17%

Whiteboards · Question 1 of 9

A concert ticket costs $58, and the sales tax is 6.5%.

How much is the tax?

Answer it.

Whiteboards · Question 1 of 9

A concert ticket costs $58, and the sales tax is 6.5%.

How much is the tax?

$$6.5\% = 0.065$$

$$\text{Tax:} \quad 0.065 \cdot 58 = 3.77$$

Answer: $3.77

Whiteboards · Question 2 of 9

A $65 bike repair has a 7% sales tax.

What is the total?

A. $110.50

B. $72

C. $4.55

D. $69.55

Answer it.

Whiteboards · Question 2 of 9

A $65 bike repair has a 7% sales tax.

What is the total?

$$1.07 \cdot 65 = 69.55$$

Or: $0.07 \cdot 65 = 4.55$ and $65 + 4.55 = 69.55$

Answer: D — $69.55

Whiteboards · Question 3 of 9

A $42 lunch bill gets an 18% tip.

How much is the tip?

Answer it.

Whiteboards · Question 3 of 9

A $42 lunch bill gets an 18% tip.

How much is the tip?

$$\text{Tip: } 0.18 \cdot 42 = 7.56$$

Answer: $7.56

Whiteboards · Question 4 of 9

A $26 haircut gets a 15% tip.

What is the total with the tip?

Answer it.

Whiteboards · Question 4 of 9

A $26 haircut gets a 15% tip.

What is the total with the tip?

$$1.15 \cdot 26 = 29.90$$

Or: $0.15 \cdot 26 = 3.90$ and $26 + 3.90 = 29.90$

Answer: $29.90

Whiteboards · Question 5 of 9

Concert tickets cost $240, and the service fee is $16.80.

What percent of the ticket cost is the fee?

Answer it.

Whiteboards · Question 5 of 9

Concert tickets cost $240, and the service fee is $16.80.

What percent of the ticket cost is the fee?

Part ÷ whole: $16.80 \div 240 = 0.07$

$0.07 \cdot 100 = 7$, so the fee is 7%

Answer: 7%

Whiteboards · Question 6 of 9

A price p has an 8% sales tax.

Which expression gives the total?

A. $p + 0.08$

B. $1.8p$

C. $1.08p$

D. $0.08p$

Answer it.

Whiteboards · Question 6 of 9

A price p has an 8% sales tax.

Which expression gives the total?

Total = price + tax: $p + 0.08p = 1.08p$

Answer: C — 1.08p

Whiteboards · Question 7 of 9

A broken-screen fee is 65% of the tablet's cost, and the fee is $84.50.

What did the tablet cost?

Answer it.

Whiteboards · Question 7 of 9

A broken-screen fee is 65% of the tablet's cost, and the fee is $84.50.

What did the tablet cost?

Let c be the cost: $0.65c = 84.50$

Divide by 0.65: $c = 84.50 \div 0.65 = 130$

Answer: $130

Whiteboards · Question 8 of 9

A $64 pizza order for 5 friends has a 7.25% sales tax.

What is the total for the order?

Answer it.

Whiteboards · Question 8 of 9

A $64 pizza order for 5 friends has a 7.25% sales tax.

What is the total for the order?

$7.25\% = 0.0725$

Tax: $0.0725 \cdot 64 = 4.64$

Total: $64 + 4.64 = 68.64$

Answer: $68.64

Whiteboards · Question 9 of 9

Find a 20% tip on a $38.50 bill by finding 10% first.

What is the tip? Explain each step.

Write your answer in sentences.

Whiteboards · Question 9 of 9

Find a 20% tip on a $38.50 bill by finding 10% first.

What is the tip? Explain each step.

10% is one tenth: $38.50 \div 10 = 3.85$

20% is twice 10%: $2 \cdot 3.85 = 7.70$

Answer: $7.70: 10% is $3.85, doubled

Independent Practice

1. A $35 shirt has a 6% sales tax. How much is the tax?
2. A $44 repair has a 7.5% sales tax. What is the total?
3. A $54 dinner gets a 15% tip. What is the total with the tip?
4. A $55 order has a $4.40 delivery fee. What percent of the order is the fee?
5. Write 8.25% as a decimal.
6. A delivery fee is 15% of the order, and the fee is $6.75. What was the order?

Before You Go

Tax, tip or fee: a percent of the subtotal — add it on, or multiply by 1 plus the rate.

A percent sign means divide by 100, even with a decimal in it: 6.5% is 0.065.

Tomorrow: two percent steps in a row — a discount, then tax on the sale price.

IXL

1. Open IXL and start today's skills.
2. Work on paper where the question needs work. The answer box does not show it.
3. Every skill listed is required, to a SmartScore of 60. Due by the Unit 7 test.

Today's skills — all required

Tax, tip, and more: word problems (24Z)

Find the percent: tax, discount, and more (PBM)