GRADE 7 · UNIT 7 · LESSON 4

Interpreting Circle Graphs

MA.7.DP.1.4

I can use a circle graph to find amounts, compare sectors and find the whole, and say what a circle graph shows well and what it cannot show.

Warm-Up

1. 42 of 72 students chose pizza. Find the pizza sector's angle.
2. A sector's angle is 288°. What percent of the circle is it?
3. Scale 1 cm : 6 km. A road is 4.5 cm on the map. How long is it?
4. Solve: $0.4n = 18$

Warm-Up

1. 42 of 72 students chose pizza. Find the pizza sector's angle.

   210°

2. A sector's angle is 288°. What percent of the circle is it?

   80%

3. Scale 1 cm : 6 km. A road is 4.5 cm on the map. How long is it?

   27 km

4. Solve: $0.4n = 18$ $n = 45$

Vocabulary

budget

a plan that splits one amount of money into parts

strength (of a display)

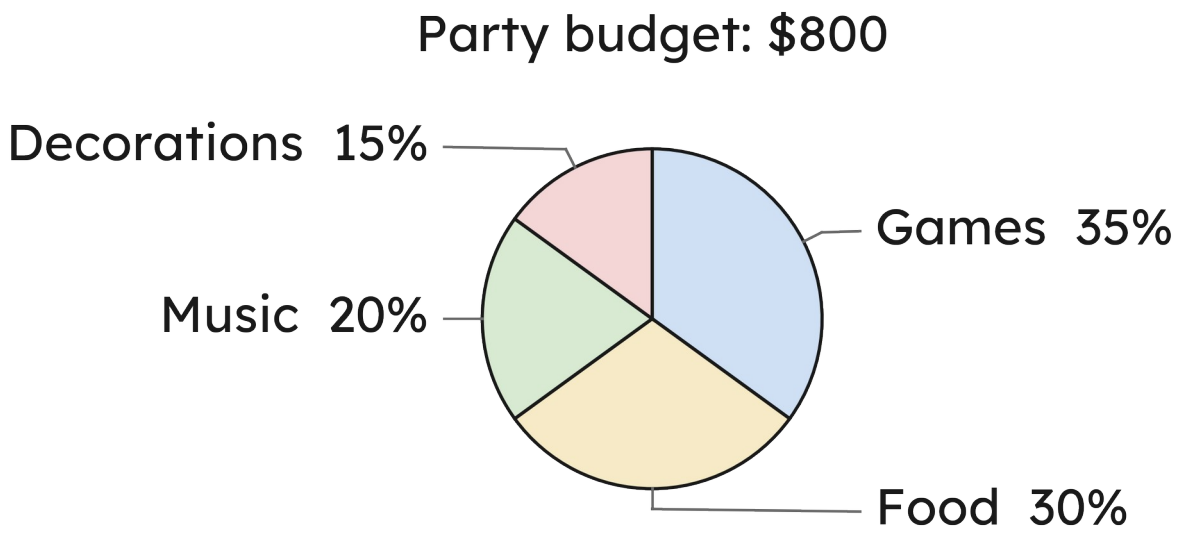
something the display shows well

limitation (of a display)

something the display cannot show

Notes

I. From a sector to an amount



A part — the percent as a decimal times the whole.

Food, 30%: $0.30 \cdot 800 = 240$, so the food budget is \$240.

Notes

II. Back to the whole

Decorations are 15% of the budget, and they cost $120.

Let b be the whole budget: 15% of b is 120.

$$0.15b = 120$$

$$b = 120 \div 0.15 = 800$$

The whole budget is $800. Check: $0.15 \cdot 800 = 120$

Notes

III. Comparing sectors

Party budget, $800: Games 35%, Food 30%, Music 20%, Decorations 15%.

How many more — Food than Music: 30% − 20% = 10% of the budget.

$0.10 \cdot 800 = 80$, so $80 more on food.

Times as much — Food and Decorations: $240 \div 120 = 2$

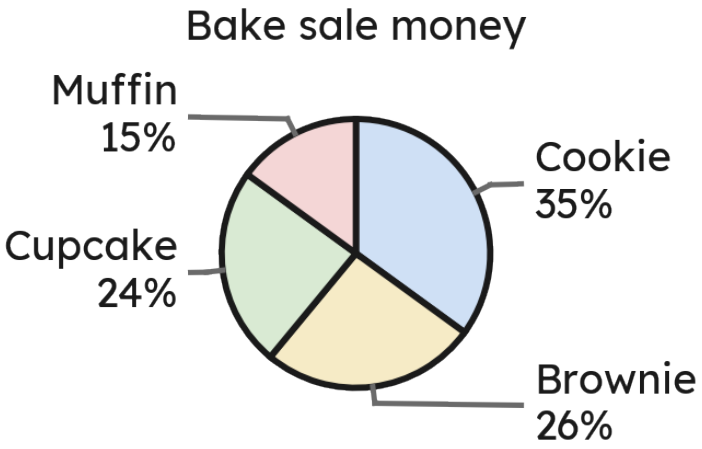
Together — Games and Music: 35% + 20% = 55%, and $0.55 \cdot 800 = 440$

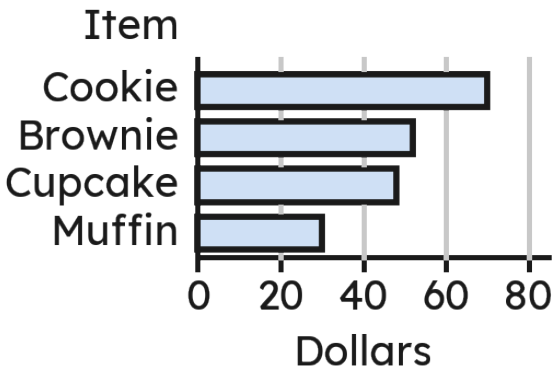
Notes

IV. What a circle graph shows, and what it cannot

Shows well — each part of one whole, and its percent.

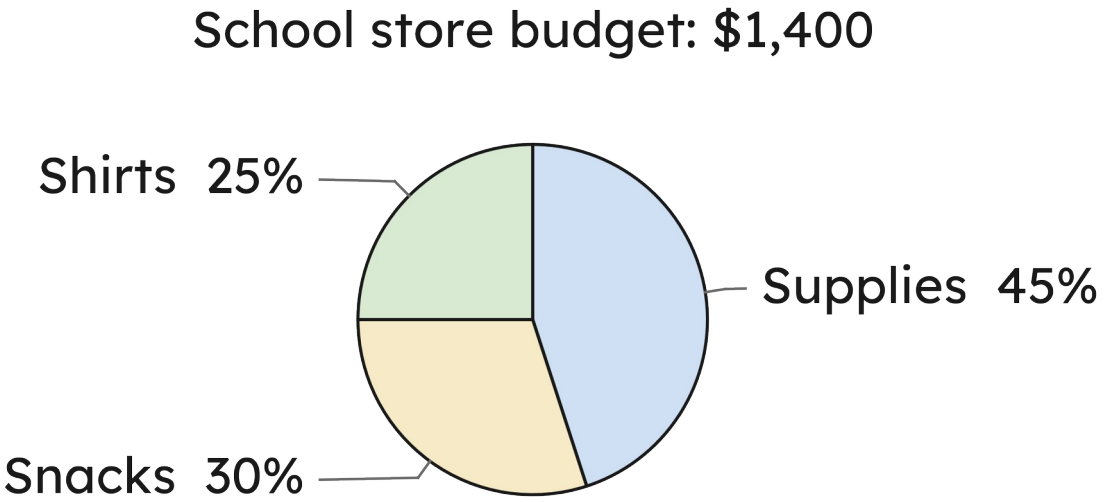
Cannot show — an amount unless the total is printed; more than six categories clearly.





Example 1

A school store's $1,400 budget is shown in the circle graph.



How much is for snacks? How much more is for supplies than shirts?

Example 1

Snacks are 30% of the $1,400.

$$0.30 \cdot 1{,}400 = 420$$

Supplies than shirts: 45% – 25% = 20% of the $1,400.

$$0.20 \cdot 1{,}400 = 280$$

Answer: $420 for snacks; $280 more for supplies

Your Turn

A band's $900 budget: Travel 40%, Uniforms 35%, Music 25%.

How much goes to uniforms? How much more goes to travel than to music?

Your Turn

A band's $900 budget: Travel 40%, Uniforms 35%, Music 25%.

How much goes to uniforms? How much more goes to travel than to music?

Uniforms: $0.35 \cdot 900 = 315$

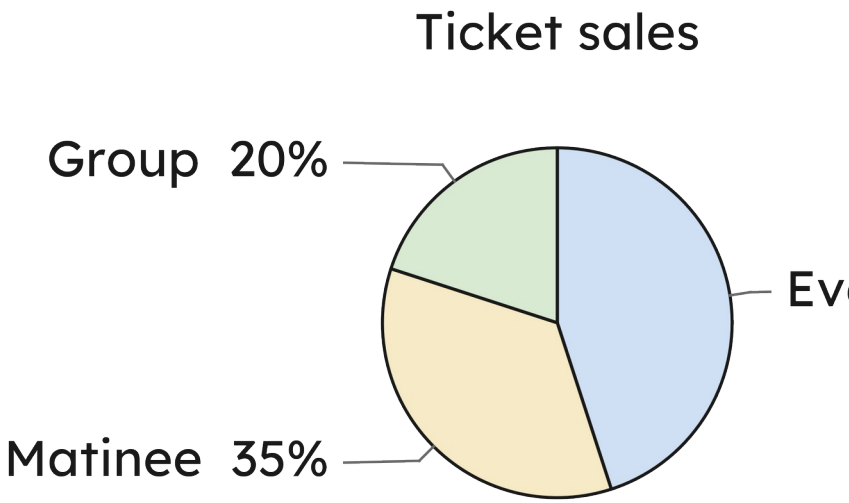
Travel than music: $40\% - 25\% = 15\%$

$0.15 \cdot 900 = 135$

Answer: $315 for uniforms; $135 more for travel

Example 2

Matinee tickets brought in $1,890 of a theater's ticket sales.



What were the theater's total ticket sales?

Example 2

Let s be the total sales. Matinee is 35% of s.

$$0.35s = 1{,}890$$

$$s = 1{,}890 \div 0.35 = 5{,}400$$

Check: $0.35 \cdot 5{,}400 = 1{,}890$.

Answer: $5,400 in ticket sales

Your Turn

A bakery's circle graph shows bread as 45% of its sales, $1,260.

What were the bakery's total sales?

Your Turn

A bakery's circle graph shows bread as 45% of its sales, $1,260.

What were the bakery's total sales?

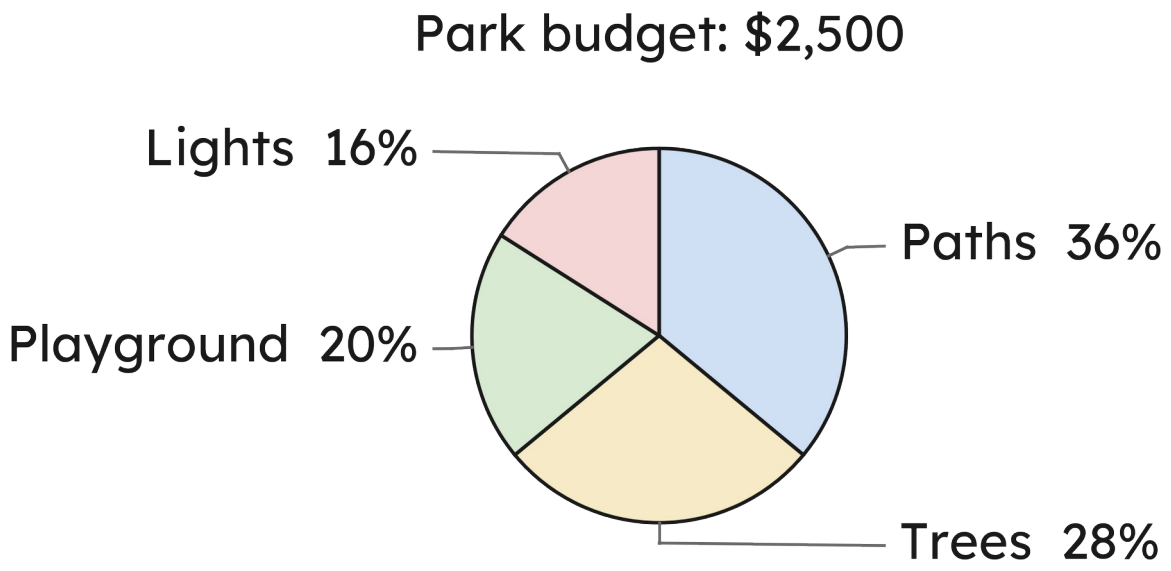
Let s be the total sales: $0.45s = 1{,}260$

$s = 1{,}260 \div 0.45 = 2{,}800$

Answer: $2,800

Whiteboards · Question 1 of 9

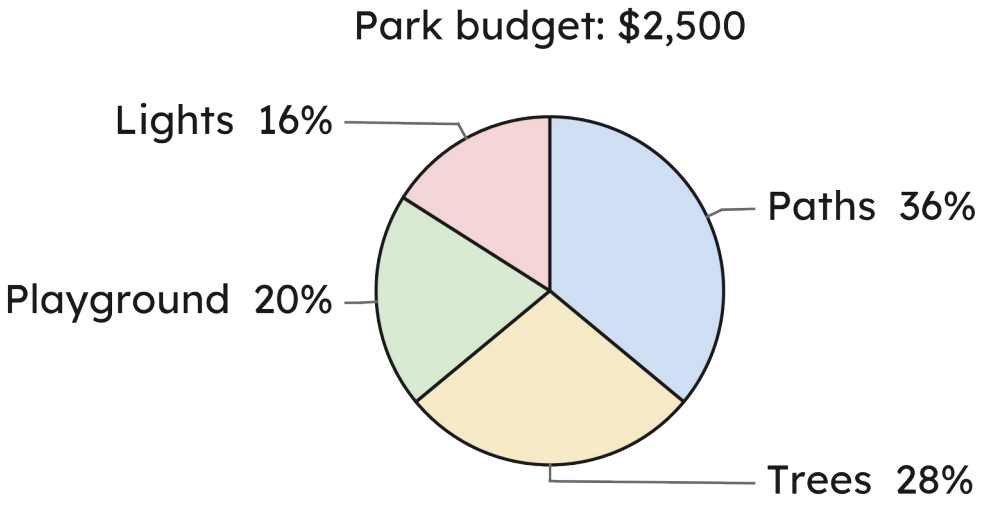
How many dollars of this park budget go to trees?



Answer it.

Whiteboards · Question 1 of 9

How many dollars of this park budget go to trees?

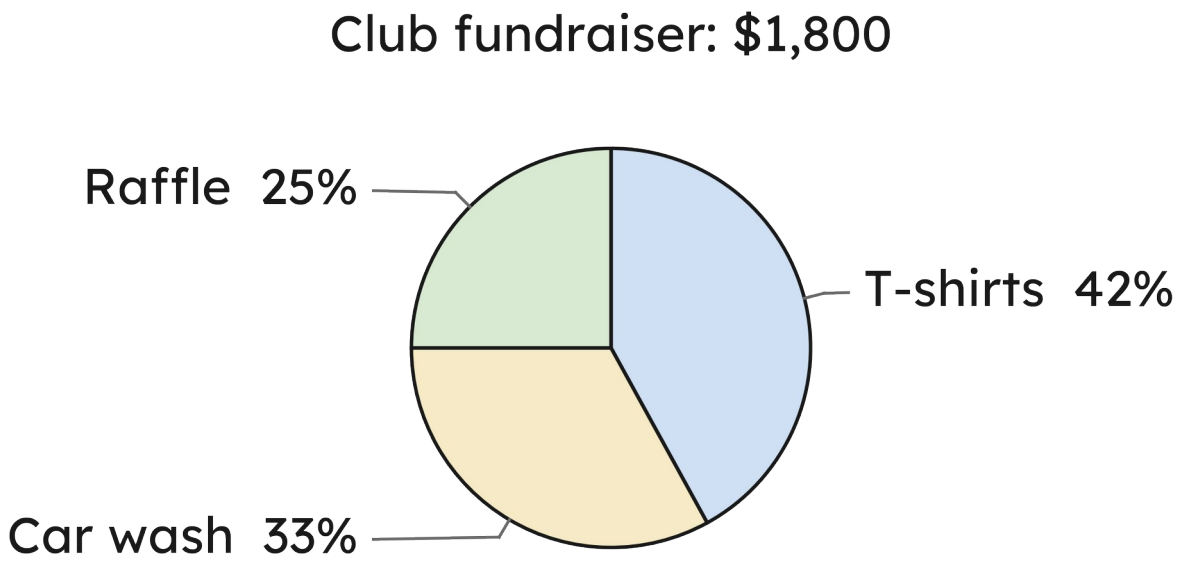


Trees: $0.28 \cdot 2{,}500 = 700$

Answer: $700

Whiteboards · Question 2 of 9

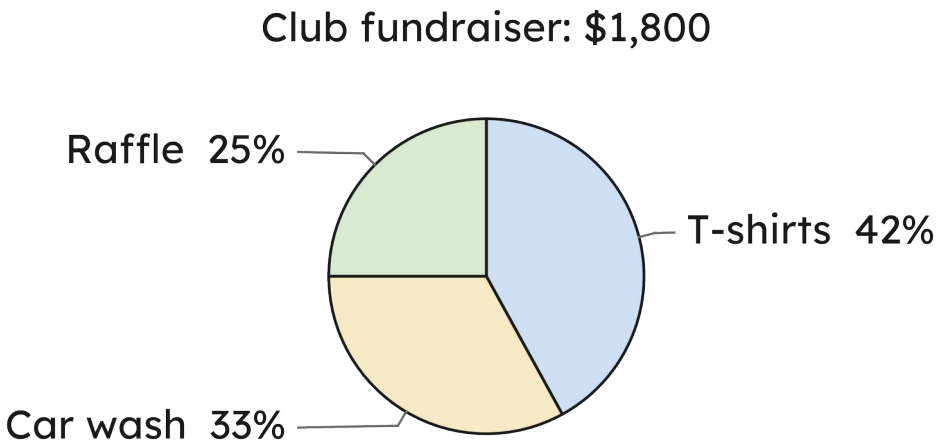
How many more dollars came from T-shirts than the raffle?



Answer it.

Whiteboards · Question 2 of 9

How many more dollars came from T-shirts than the raffle?



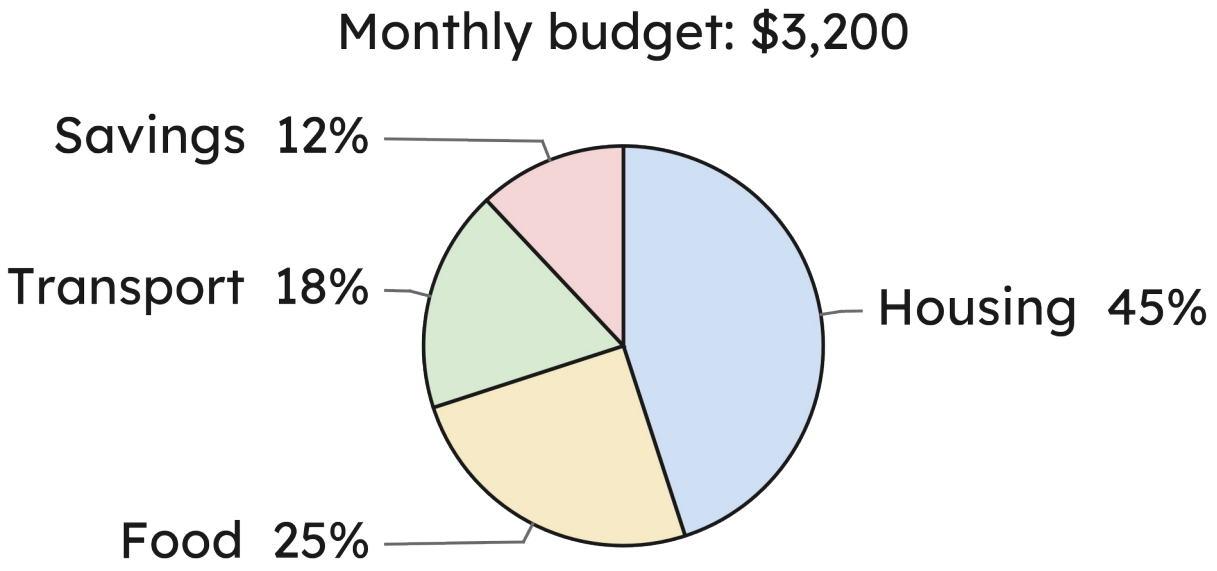
T-shirts than raffle: $0.42 - 0.25 = 0.17$

$0.17 \cdot 1{,}800 = 306$

Answer: $306 more

Whiteboards · Question 3 of 9

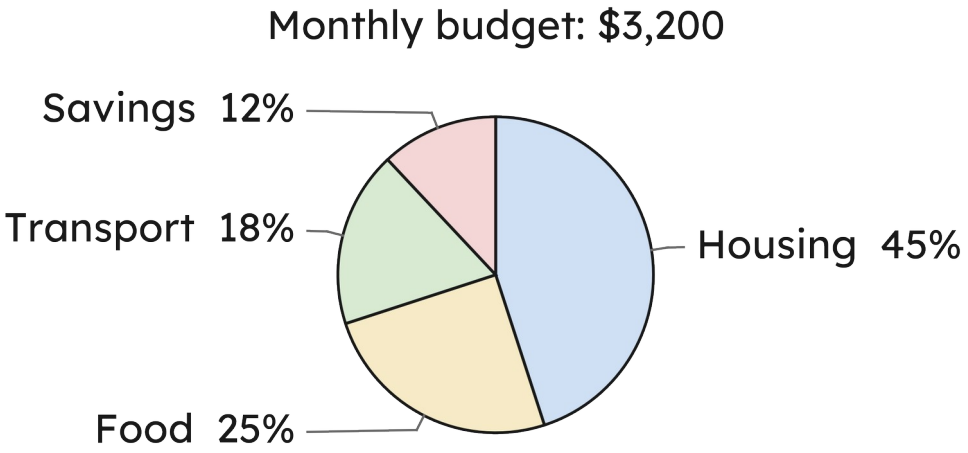
How many dollars go to food and savings together?



Answer it.

Whiteboards · Question 3 of 9

How many dollars go to food and savings together?



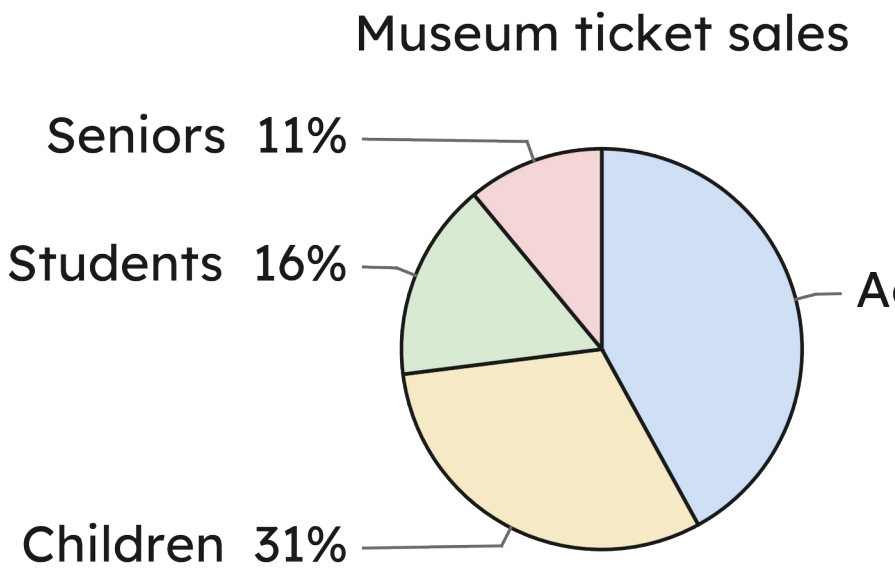
Food and savings: $0.25 + 0.12 = 0.37$

$0.37 \cdot 3{,}200 = 1{,}184$

Answer: $1,184

Whiteboards · Question 4 of 9

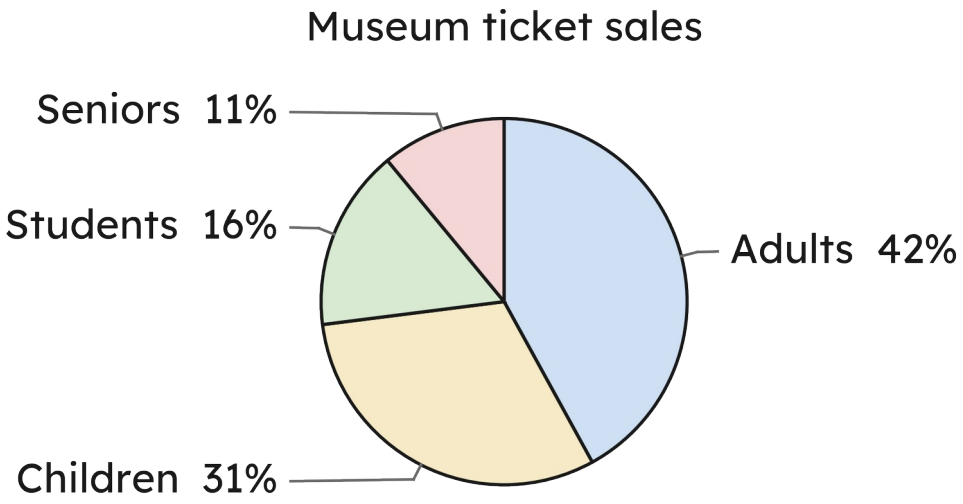
Student tickets made $1,200. What were the total sales?



Answer it.

Whiteboards · Question 4 of 9

Student tickets made $1,200. What were the total sales?



Let s be the total: $0.16s = 1{,}200$

$s = 1{,}200 \div 0.16 = 7{,}500$

Answer: $7,500

Whiteboards · Question 5 of 9

A circle graph of a fair's spending prints Rides 38%, Food 27%, Games 21%, Prizes 14%, and no total.

Which of these can the graph NOT tell you?

A. The fraction for rides

B. If food or games got more

C. The percent not on rides

D. The dollars for prizes

Answer it.

Whiteboards · Question 5 of 9

A circle graph of a fair's spending prints Rides 38%, Food 27%, Games 21%, Prizes 14%, and no total.

Which of these can the graph NOT tell you?

Rides: 38% is $\frac{38}{100}$ of the spending. Food 27% > games 21%.

Not rides: $100 - 38 = 62$, so 62%.

No total is printed: no dollars can be found.

Answer: D — the dollars spent on prizes

Whiteboards · Question 6 of 9

A shop wants to compare the dollar sales of its 8 departments.

Which display fits best?

A. Circle graph

B. Line plot

C. Bar chart

D. Histogram

Answer it.

Whiteboards · Question 6 of 9

A shop wants to compare the dollar sales of its 8 departments.

Which display fits best?

Departments are names: categorical data.

8 categories: more than a circle graph should show.

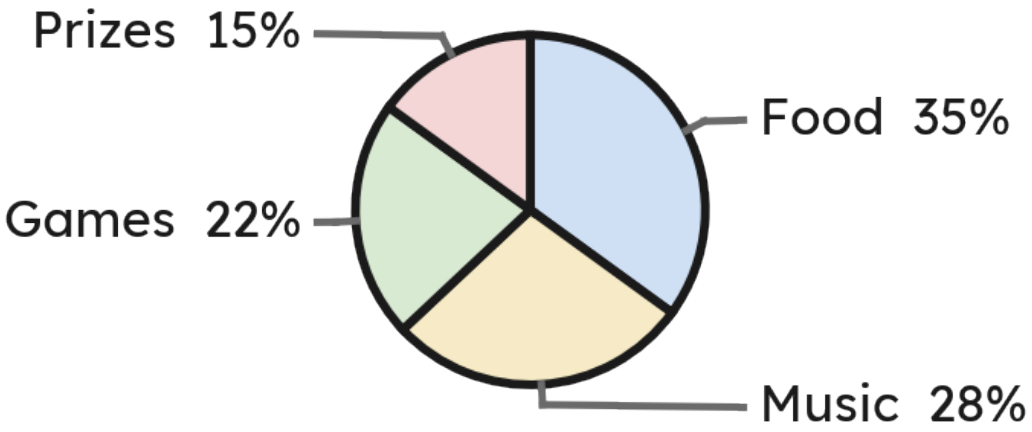
To compare dollar amounts, one bar for each department.

Answer: C — Bar chart

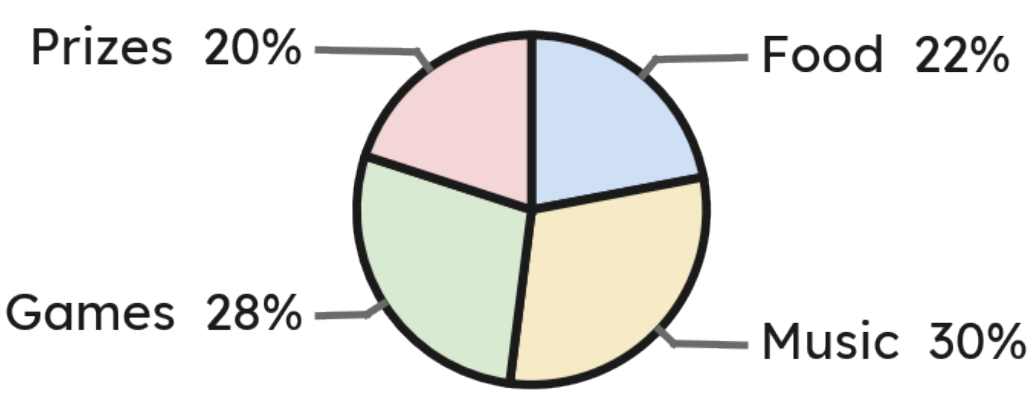
Whiteboards · Question 7 of 9

Which plan spends more dollars on food? How much more?

Plan A: $700



Plan B: $1,200

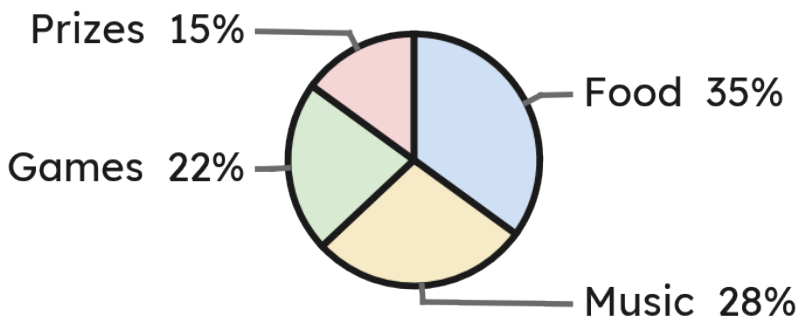


Answer it.

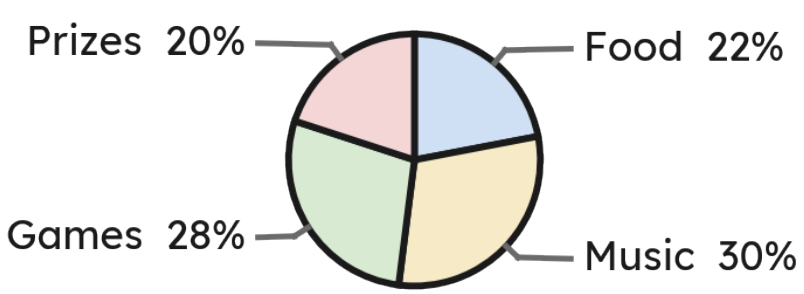
Whiteboards · Question 7 of 9

Which plan spends more dollars on food? How much more?

Plan A: $700



Plan B: $1,200



A: $0.35 \cdot 700 = 245$ B: $0.22 \cdot 1{,}200 = 264$ $264 - 245 = 19$

Answer: Plan B, by $19

Whiteboards · Question 8 of 9

A school fair took in $640 over 4 hours, and 15% of the money came from the bake sale.

How many dollars came from the bake sale?

Answer it.

Whiteboards · Question 8 of 9

A school fair took in $640 over 4 hours, and 15% of the money came from the bake sale.

How many dollars came from the bake sale?

Bake sale: $0.15 \cdot 640 = 96$

Answer: $96

Whiteboards · Question 9 of 9

Two classes' circle graphs both show that 25% chose soccer.

Did the same number of students choose soccer? Explain.

Write your answer in sentences.

Whiteboards · Question 9 of 9

Two classes' circle graphs both show that 25% chose soccer.

Did the same number of students choose soccer? Explain.

A class of 28: $0.25 \cdot 28 = 7$

A class of 32: $0.25 \cdot 32 = 8$

The same percent of a different whole is a different number.

Answer: Not necessarily: it depends on each class's size.

Independent Practice

1. A circle graph of a $1,500 budget shows 32% for food. How many dollars go to food?

2. A $2,400 budget is 45% rent and 20% food. How many more dollars go to rent than to food?

3. A graph of $850 in sales shows shirts 28% and hats 12%. How many dollars came from shirts and hats together?

4. A snack sector is 24% of a budget and stands for $300. What is the whole budget?

5. Club A's $500 budget is 30% games; Club B's $800 budget is 22% games. Which club spends more on games, and by how much?

6. Name one thing a circle graph cannot show unless it is printed on the graph.

Before You Go

A part: the percent as a decimal times the whole.

The whole: write the one-step equation and divide.

Tomorrow: a percent of a price — discounts and markups.

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

Interpret circle graphs (WNJ)