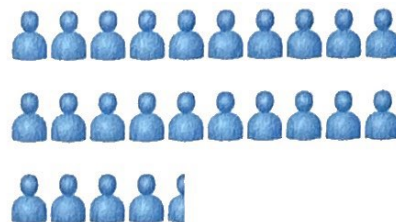**Last Year**

●Develop Solving Problems Involving Percent Change

➤ **Read and try to solve the problem below.**

A county fair sells adult and child tickets. Last year, the fair sold 24,600 adult tickets and 16,400 child tickets. This year, the number of adult tickets sold increased by 10% and the number of child tickets sold decreased by 20%. What is the overall percent change in ticket sales from last year to this year?

👤 = 1,000 adult tickets   👤 = 1,000 child tickets

TRY IT 🖊️ **Math Toolkit** double number lines, grid paper

Adult
$$24600 (1.10) = 27060$$

Child
$$16400 (0.80) = 13120$$

Total
24600
+16400
‾‾‾‾‾
41000
Last year

27060
+13120
‾‾‾‾‾
40180
This year

$$\frac{820}{41,000} = 0.02 = 2\%$$

41000
−40180
‾‾‾‾‾
820
Change

The ticket sales decreased by 2%

DISCUSS IT

Ask: How did you get started finding the percent change?

Share: I got started by ...

DISCUSS IT *continued*

➤ **Explore different ways to find percent change.**

> A county fair sells adult and child tickets. Last year, the fair sold 24,600 adult tickets and 16,400 child tickets. This year, the number of adult tickets sold increased by 10% and the number of child tickets sold decreased by 20%. What is the overall percent change in ticket sales from last year to this year?

Model It

You can compare this year's ticket sales to last year's ticket sales.

Last year's ticket sales

Adults: 24,600

Children: 16,400

Total: 24,600 + 16,400 = **41,000**

This year's ticket sales

Adults: 1.1(24,600) = 27,060

Children: 0.8(16,400) = 13,120

Total: 27,060 + 13,120 = **40,180**

Divide to find this year's ticket sales as a percent of last year's ticket sales.

$$\frac{40,180}{41,000} = 0.98$$

Model It

You can compare the amount of change to last year's ticket sales.

Last year's ticket sales: **41,000**

This year's ticket sales: **40,180**

$$\text{Percent change} = \frac{\text{amount of change}}{\text{original amount}} \times 100$$

$$= \frac{41,000 - 40,180}{41,000} \times 100$$

$$= \frac{820}{41,000} \times 100$$

$$= 0.02 \times 100$$

CONNECT IT

▶ **Use this page to deepen your understanding of finding percent change.**

1 Talk About It

a. Look at the first **Model It**. What does 0.98 mean in the context of the problem?

> This years ticket sales is 98% of the tickets sold last year

b. How can you use the percent found in the first **Model It** to find the percent change shown in the second **Model It**?

> You can subtract it from 100% to find the percent of change

c. The number of adult tickets sold increased by 10%. The number of child tickets sold decreased by 20%. Why is the overall percent change in ticket sales not a 10% decrease?

> The amount of tickets sold for adults and children are different amounts.

2 Show What You Know

The percent change can help you understand how the ticket sales changed better than the amount of change alone. Explain why.

> Knowing that the change is 820 tickets does not tell you whether this is a large change or a small change from the previous year.
> The percent change tells you that the amount of the change is not very great relative to the starting amount

3 Reflect
Think about all the models and strategies you have discussed today. Describe how one of them helped you better understand percent change.

Apply It

➤ **Use what you learned to solve these problems.**

4 One year, an estimated 598,000 sandhill cranes migrated in March. The next March, an estimated 660,000 sandhill cranes migrated. To the nearest percent, what is the percent change in the number of migrating cranes from the first March to the next? Is this a percent increase or a percent decrease? Show your work.

sandhill cranes

660
↑

598..

$$\begin{array}{r} 660000 \\ -598000 \\ \hline 62000 \end{array}$$

$$\frac{62000}{598000} = 0.103 = 10.3 = 10\%$$

SOLUTION _The percent of change is about a 10% increase_

5 A large container of breath mints has a mass of 50 g. A small container has a mass of 10 g. What is the percent decrease from the mass of the large container to the mass of the small container? Show your work.

50
↓10

$$\begin{array}{r} 50 \\ -10 \\ \hline 40 \text{ change} \end{array}$$

$$\frac{40}{50} = 0.8 = 80\%$$

SOLUTION _The percent decrease is 80%_

6 What is the percent change from 40 to 51? Is this a percent increase or a percent decrease? Show your work.

51
↑
40

$$\begin{array}{r} 51 \\ -40 \\ \hline 11 \end{array}$$

$$\frac{11}{40} = 0.275 = 27.5\%$$

SOLUTION _It is a percent increase of 27.5%_