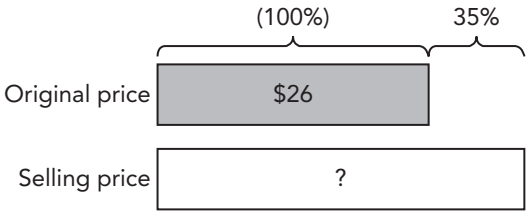
Name: _____ Date: _____

Lesson 6.5 Percent of Change

Solve.

Example

A bookshop sells books at a 35% markup. The original price of a book is $26.
What is the selling price of the book?



Method 1

35 % of $ 26 = $\frac{35}{100}$ × $ 26

= $ 9.10

The rate at which the price of merchandise is increased over its cost is called a **markup**.

The price is marked up by $ 9.10 .

$ 26 + $ 9.10 = $ 31.10 .

The selling price of the book is $ 31.10 .

Method 2

100 % → $ 26

1 % → $ $\frac{26}{100}$

35 % → 35 × $ $\frac{26}{100}$ = $ 9.10

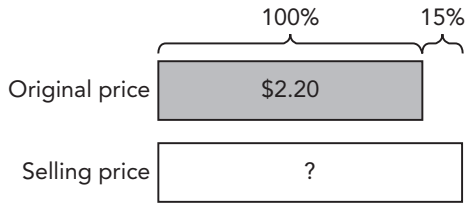
The price is marked up by $ 9.10 .

$ 26 + $ 9.10 = $ 31.10

The selling price of the book is $ 31.10 .

Name: _____ Date: _____

1. A box of cereal is sold at a 15% markup. The original price of the box of cereal is $2.20. At what price will the cereal be sold?



Method 1

_____% of $_____ = _____ × $_____

= $_____

The price is marked up by $_____.

$_____ + $_____ = $_____

The selling price of the cereal is $_____.

Method 2

_____% → $_____

_____% → $_____

_____% → _____ × $_____ = $_____

The price is marked up by $_____.

$_____ + $_____ = $_____

The selling price of the cereal is $ _____.

Name: _____ Date: _____

2. Angeline sells T-shirts at a 40% markup. She pays $16 for each T-shirt. At what price will Angeline sell each T-shirt?

3. At 9:00 A.M., the weight of the paper in a recycling bin was 60 pounds. One hour later, the weight of the paper in the bin had increased by 25%. Find the weight of the paper in the bin at 10:00 A.M.

4. The price of a laptop computer was $1,980. During a fair, the price was reduced by 30%. Find the price of the computer during the fair.

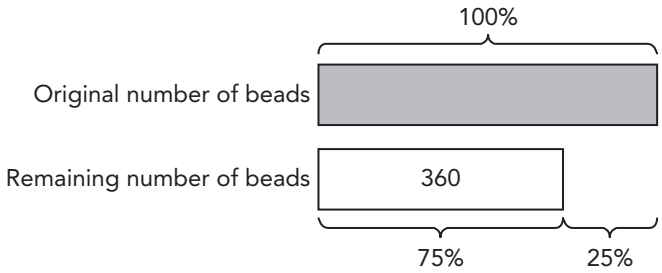
Name: _____ Date: _____

Solve.

Example

Natalie had some beads. She used 25% of the beads to make a necklace. She had 360 beads remaining. She then used 30% of the remaining beads to make a bracelet.

a) How many beads did Natalie have at first?



100 % – 25 % = 75 %

75 % → 360

$\frac{360}{75}$

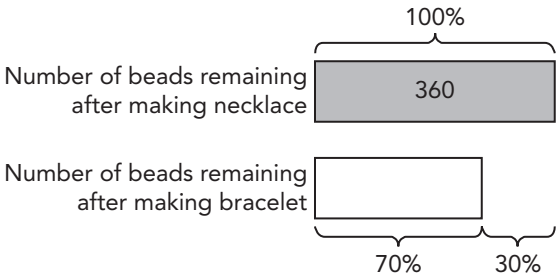
1 % → $\frac{360}{75}$

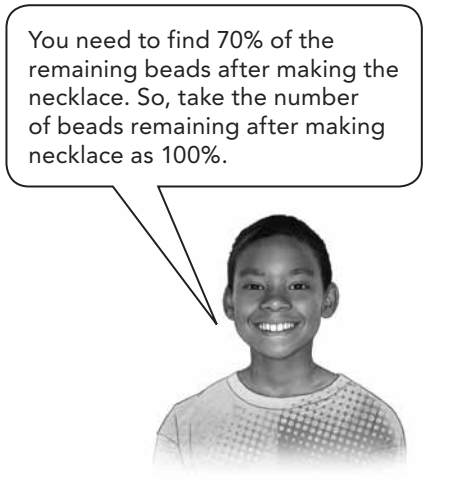
$\frac{360}{75}$

100 % → 100 × $\frac{360}{75}$ = 480

Natalie had 480 beads at first.

b) How many beads were left after making the bracelet?





100 % – 30 % = 70 %

$\frac{70}{100}$

70 % × 360 = $\frac{70}{100}$ × 360

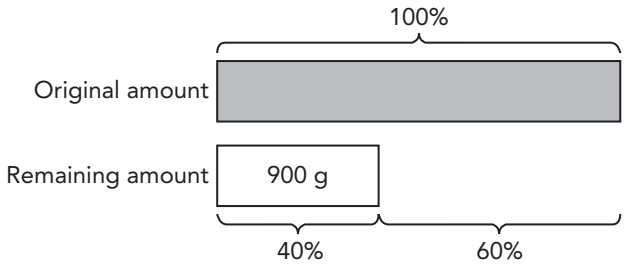
= 252

There were 252 beads left after making the bracelet.

Name: _____ Date: _____

5. A chef made some dough. He used 60% of the dough to make a loaf of bread. He then used 15% of the remaining 900 grams of dough to make some biscuits.

a) How much dough did the chef make at first?



_____% − _____% = _____%

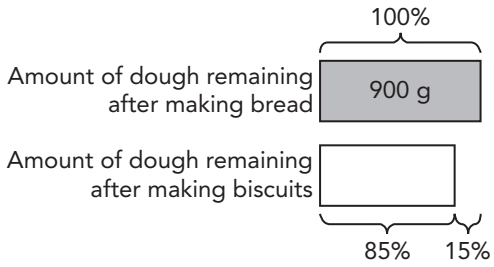
_____% → _____ g

_____% → _____ g

_____% → _____ × _____ g = _____ g

The chef made _____ grams of dough at first.

b) How much dough was left after making the biscuits?



_____% − _____% = _____%

_____% × _____ g = _____ × _____ g

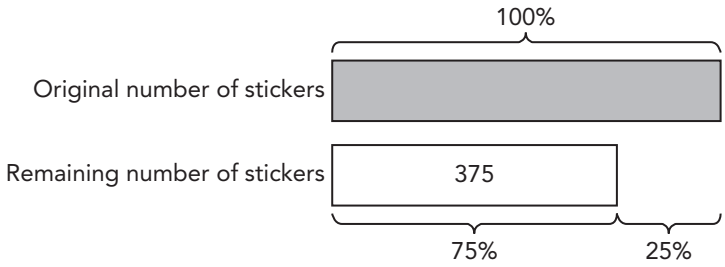
= _____ g

_____ grams of dough were left after making the biscuits.

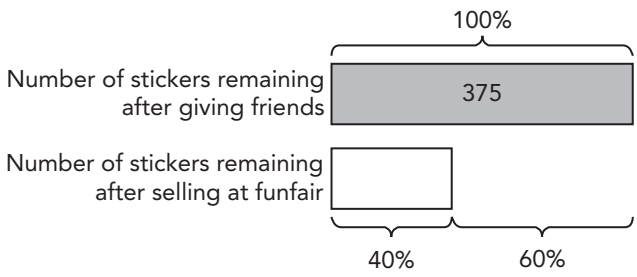
Name: _____ Date: _____

6. Gina had some stickers. She gave 25% of the stickers to her friends. Gina then sold 60% of the remaining 375 stickers at a funfair.

a) How many stickers did she have at first?



b) How many stickers did Gina have left?

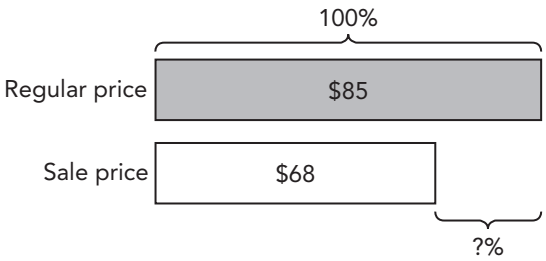


Name: _____ Date: _____

Solve.

Example

The regular price of a jacket is \$85. During a sale, its price was reduced to \$68.
Find the percent discount.



\$ 85 − \$ 68 = \$ 17

The discount was \$ 17 .

The amount by which the original price of merchandise is reduced is called a **discount**.

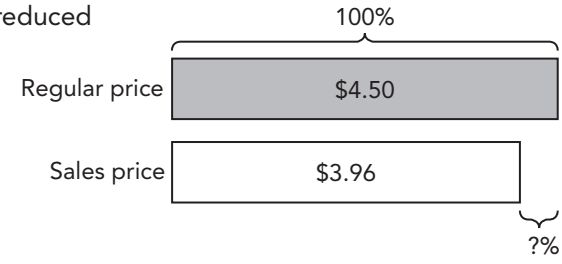
\$ 85 → 100 %

\$ 1 → $\frac{100}{85}$ %

\$ 17 → 17 × $\frac{100}{85}$ % = 20 %

The percent discount was 20 %.

7. A bookcase cost \$450. During a sale, its price was reduced to \$396. Find the percent discount.



\$_____ − \$_____ = \$_____

The discount was \$_____.

\$_____ → _____%

\$_____ → _____%

\$_____ → _____ × _____% = _____%

The percent discount was _____%.

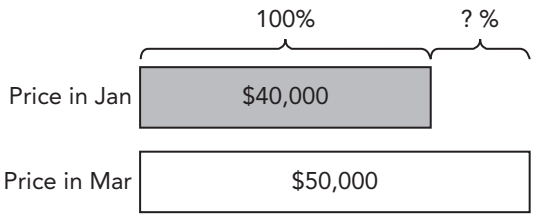
Name: _____ Date: _____

8. A gown cost $500. During a sale, the gown was sold at a discounted price of $300. Find the percent discount.

Solve.

Example

A car cost $40,000 in January. Its price increased to $50,000 in March. Find the percent increase in the price of the car.



$\$\underline{50,000} - \$\underline{40,000} = \$\underline{10,000}$

The increase in price was $\$\underline{10,000}$.

$\$\underline{40,000} \rightarrow \underline{100}\%$

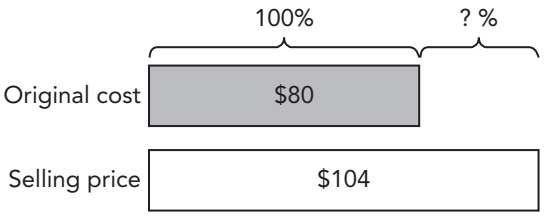
$\$\underline{1} \rightarrow \underline{\frac{100}{40,000}}\%$

$\$\underline{10,000} \rightarrow \underline{10,000} \times \underline{\frac{100}{40,000}}\% = \underline{25}\%$

The percent increase in the price of the car was $\underline{25}$%.

Name: _____ Date: _____

9. Max bought a ring for $80. He sold the ring for $104 a year later. Find the percent increase in the price of the ring.



$_____ − $_____ = $ _____

The increase in price was $_____.

$_____ → _____%

$_____ → _____%

$_____ → _____ × _____% = _____%

The percent increase in the price of the ring was _____%.

10. A china platter cost $550. During an auction, the platter was sold for $820. What was the percent increase in the cost of the platter?

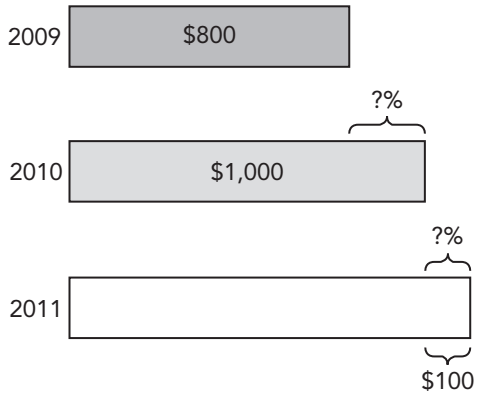
Name: _____ Date: _____

Solve.

Example

The price of a table in 2009 was $800. In 2010, the price of the same table increased to $1,000. In 2011, the price of the table increased by $100.

a) Find the percent increase in the price of the table from 2009 to 2010.



Increase in price of the table from 2009 to 2010 = $ 1,000 − $ 800

= $ 200

Percent increase = $\frac{200}{800}$ × 100 %

= 25 %

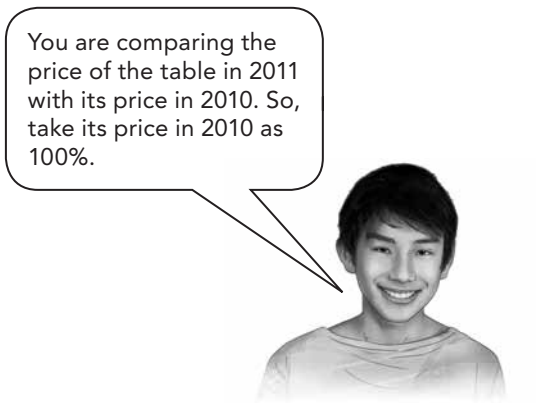
The percent increase in the price of the table from 2009 to 2010 was 25 %

b) Find the percent increase in the price of the table from 2010 to 2011.

Percent increase = $\frac{100}{1{,}000}$ × 100 %

= 10 %

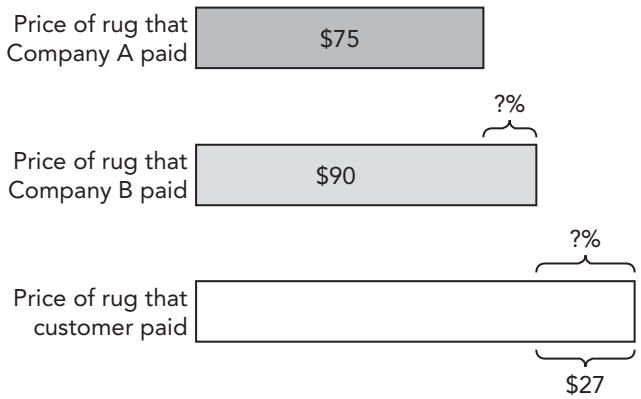
The percent increase in the price of the table from 2010 to 2011 was 10.



Name: _____ Date: _____

11. A rug cost $75 when it was imported by Company A. Company A sold the rug to Company B for $90. Company B sold the rug to a customer by increasing the price by $27.

a) Find the percent increase in the price of the rug when Company A sold it to Company B.



Increase in price of the rug when Company A sold it to Company B

= $_____ − $_____

= $_____

Percent increase = _____ × _____%

= _____%

The percent increase in the price of the rug when Company A sold it to Company B was _____%.

b) Find the percent increase in the price of the rug when Company B sold it to a customer.

Percent increase = _____ × _____%

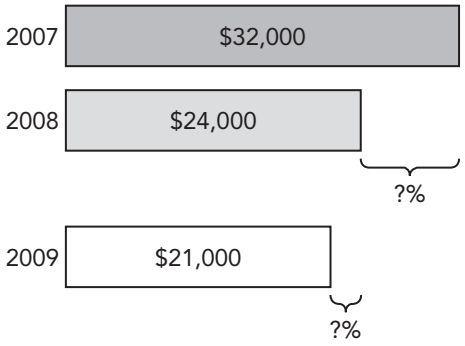
= _____%

The percent increase in the price of the rug when Company B sold it to a customer was _____%.

Name: _____ Date: _____

12. Ken bought a car for $32,000 in 2007. The value of the car decreased to $24,000 in 2008. In 2009, the value of his car had decreased to $21,000.

a) What was the percent decrease in value of his car from 2007 to 2008?



Decrease in price of car from 2007 to 2008 = $_____ − $_____

= $_____

Percent decrease = _____ × _____%

= _____%

The percent decrease in the price of the car from 2007 to 2008 was

_____%.

b) What was the percent decrease in value of his car from 2008 to 2009?

Percent decrease = _____ × _____%

= _____%

The percent decrease in the price of the car from 2008 to 2009 was

_____%.

Name: _____ Date: _____

13. A dog weighed 8 pounds in January. In February, the dog's weight increased to 9.2 pounds. In April, the dog's weight had increased to 11.5 pounds.

a) Find the percent increase in the dog's weight from January to February.

b) Find the percent increase in the dog's weight from February to April.

14. The amount of juice in a container was 15 gallons. After Rose gave some juice to her friends, there were 12 gallons of juice left. Rose then placed 3 gallons of the remaining juice in the refrigerator.

a) What was the percent decrease in the amount of juice after Rose gave some juice to her friends?

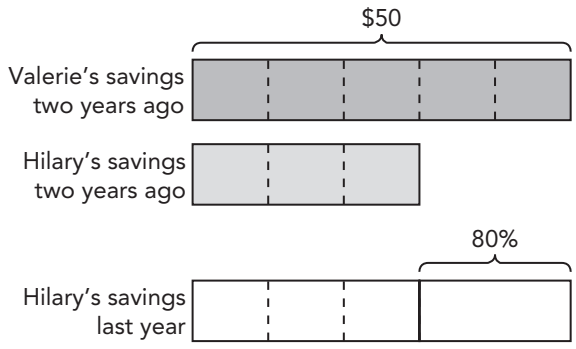
b) What was the percent decrease in the amount of juice after Rose placed 3 gallons of the remaining juice in the refrigerator?

Name: _____ Date: _____

Solve.

Example

Two years ago, Valerie's savings was \$50. Hilary's savings was $\frac{3}{5}$ of Valerie's savings. Last year, Hilary increased her savings by 80%. Find the increase in Hilary's savings.



Hilary's savings one year = $\frac{3}{5}$ × \$ 50

= \$ 30

100 % → \$ 30

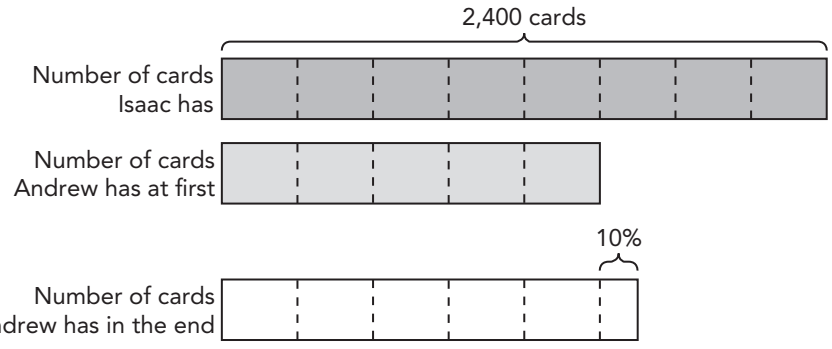
1 % → \$ 30 ÷ 100 = \$ 0.30

80 % → 80 × \$ 0.30 = \$ 24

You are comparing Hilary's savings one year with her savings the next year. So, take her savings one year as 100%.

The increase in Hilary's savings was \$ 24 .

15. Isaac has 2,400 cards. Andrew has $\frac{5}{8}$ as many cards as Isaac. Andrew then buys more cards and increases his collection by 10%. Find the increase in the number of cards that Andrew has.



Name: _____ Date: _____

Number of cards Andrew has at first = _____ × _____

= _____

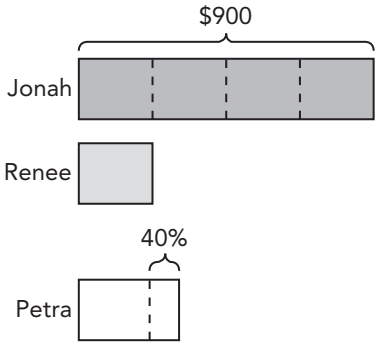
_____% → _____ cards

_____% → _____ ÷ _____ = _____ cards

_____% → _____ × _____ = _____ cards

The increase in the number of cards that Andrew has is _____.

16. Jonah has $900. Renee has $\frac{1}{4}$ as much money as Jonah. Petra has 40% more money than Renee. How much more money does Petra have than Renee?



Method 2

Sales tax:

$100\% \rightarrow \$820$

$1\% \rightarrow \$\frac{820}{100}$

$7\% \rightarrow 7 \times \$\frac{820}{100} = \$57.40$

$\$820 + \$57.40 = \$877.40$

Janice paid $877.40 in total for her airfare.

5. $162 **6.** $4,012.50

7. The cost of the DVD movie was 100%.

$\$25.50 \rightarrow 100\%$

$\$1 \rightarrow \frac{100}{25.50}\%$

$\$2.04 \rightarrow 2.04 \times \frac{100}{25.50}\% = 8\%$

The sales tax rate was 8%.

8. 7%

9. $5\% \rightarrow \$285$

$1\% \rightarrow \$285 \div 5 = \$57$

$100\% \rightarrow 100 \times \$57 = \$5{,}700$

Catherine's salary is $5,700.

10. $137,500

11. Interest

$= 2\%$ of $\$490$ for 1 year

$= \frac{2}{100} \times \$490 \times 1$

$= \$9.80$

Quincy will receive $9.80 in interest for the year.

12. $104

13. Interest $= \frac{2}{100} \times \$6{,}400 \times \frac{1}{2}$

$= \$96$

Lionel will receive $96 in interest at the end of $\frac{1}{2}$ year.

14. $4,500

Lesson 6.5

1. Method 1

15% of $\$2.20 = \frac{15}{100} \times \$2.20$

$= \$0.33$

The price is marked up by $0.33.

$\$2.20 + \$0.33 = \$2.53$

The selling price of the cereal is $2.53.

Method 2

$100\% \rightarrow \$2.20$

$1\% \rightarrow \$\frac{2.20}{100}$

$15\% \rightarrow \$15 \times \$\frac{2.20}{100} = \$0.33$

The price is marked up by $0.33.

$\$2.20 + \$0.33 = \$2.53$

The selling price of the cereal is $2.53.

2. $22.40 **3.** 75 pounds

4. $1,386

5. a) $100\% - 60\% = 40\%$

$40\% \rightarrow 900$ g

$1\% \rightarrow \frac{900}{40}$ g

$100\% \rightarrow 100 \times \frac{900}{40}$ g $= 2{,}250$ g

The chef made 2,250 grams of dough at first.

b) $100\% - 15\% = 85\%$

$85\% \times 900$ g

$= \frac{85}{100} \times 900$ g

$= 765$ g

765 grams of dough was left after making the biscuits.

6. a) 500 stickers **b)** 150 stickers

7. $\$450 - \$396 = \$54$

The discount was $54.

$\$450 \rightarrow 100\%$

$\$1 \rightarrow \frac{100}{450}\%$

$\$54 \rightarrow 54 \times \frac{100}{450}\% = 12\%$

The percent discount was 12%.

8. 40%

9. $\$104 - \$80 = \$24$

The increase in price was $24.

$\$80 \rightarrow 100\%$

$\$1 \rightarrow \frac{100}{80}\%$

$\$24 \rightarrow 24 \times \frac{100}{80}\% = \$30\%$

The percent increase in the price of the ring was 30%.

10. $49\frac{1}{11}\%$

11. a) Increase in the price of rug when Company A sold it to Company B

$= \$90 - \$75$

$= \$15$

Percent increase $= \frac{15}{75} \times 100\%$

$= 20\%$

The percent increase in the price of the rug when Company A sold it to Company B was 20%.

b) Percent increase $= \frac{27}{90} \times 100\%$

$= 30\%$

The percent increase in the price of the rug when Company B sold it to the customer was 30%.

12. a) Decrease in the price of car from 2007 to 2008

$= \$32{,}000 - \$24{,}000$

$= \$8{,}000$

Percent decrease $= \frac{8{,}000}{32{,}000} \times 100\%$

$= 25\%$

The percent decrease in the price of the car from 2007 to 2008 was 25%.

b) Percent decrease $= \frac{3{,}000}{24{,}000} \times 100\%$

$= 12.5\%$

The percent decrease in the price of the car from 2008 to 2009 was 12.5%.

13. a) 15% **b)** 25%

14. a) 20% **b)** 25%

15. a) Number of cards Max has at first

$= \frac{5}{8} \times 2{,}400$ cards

$= 1{,}500$ cards

$100\% \rightarrow 1{,}500$ cards

$1\% \rightarrow 1{,}500 \div 100 = 15$ cards

$10\% \rightarrow 10 \times 15$ cards $= 150$ cards

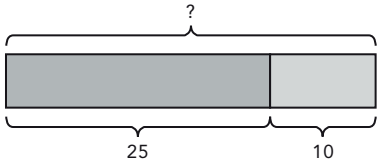
The increase in the number of cards that Max has is 150.

16. $90

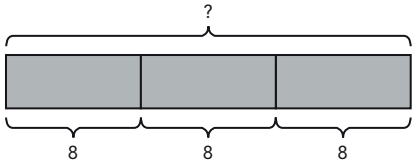
Chapter 7

Lesson 7.1

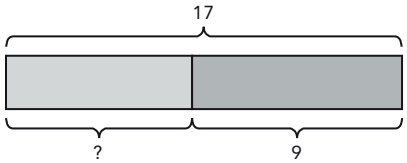
1.



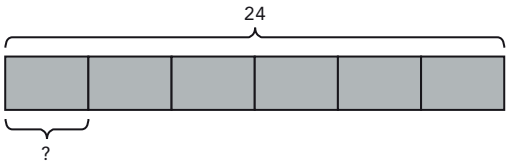
2.



3.



4.



5. The quotient of 8 and 15 is $\frac{8}{15}$. 8 is the dividend and 15 is the divisor.

6. sum **7.** difference

8. product **9.** $7 + j$

10. $m + 10$ **11.** $9 + x$

12. $3 + p$

13. a) $y + 2$ **b)** $y + 7$

14. $53 - a$ **15.** $r - 50$

16. $130 - b$ **17.** $60 - t$

18. a) $m - 5$ **b)** $m - 11$

19. $12e$ **20.** $74h$

21. $10n$ **22.** $4q$

23. $5k$ **24.** $\frac{p}{7}$

25. $\frac{h}{34}$ **26.** $\frac{h}{3}$

27. $\frac{50}{x}$ **28.** $\frac{65}{s}$

Lesson 7.2

1. $z - 13 = 20 - 13$

$= 7$

2. $3m + 2 = 3 \cdot 5 + 2$

$= 15 + 2$

$= 17$

3. $40 - 5p = 40 - 5 \cdot 6$

$= 40 - 30$

$= 10$

4. $\frac{2d}{9} = \frac{2 \cdot \boxed{3}}{9}$

$= \frac{\boxed{6}}{9}$

$= \frac{2}{3}$

5. 2 **6.** 5

7. 10 **8.** $\frac{3}{5}$

9. 14 **10.** $2\frac{2}{3}$

11. $1\frac{3}{5}$ **12.** 2

13. 22 **14.** 9

15. 42 **16.** $\frac{1}{2}$