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LEARNING OBJECTIVE: We will solve problems involving percent markups and markdowns. (G7M4L7)

CONCEPT DEVELOPMENT:

Markup: The amount of increase in a price.
Example: Safeway buys band-aids at a wholesale price of $2.00 per box, and sells them for $3.50 per box. The markup is $1.50

Markdown: The amount of decrease in a price.
Example: Heidi bought a calculator at Target. It was originally priced at $15, but on sale for $10. The markdown is $5.00

Original Price: The starting price. It can also be called the cost or wholesale price.
Example: The original price of the band-aids is $2.00.

Selling Price: The original price plus the markup or minus the markdown.
Example: The selling price of the band-aids is $3.50.

Sale price

percent

Markup rate: the percent increase in the price.
Example: Bed Bath and Beyond sold a coffee maker for $50. They bought the coffeemaker from the manufacturer for $40 and marked up the price by 25%.

percent

Markdown rate (discount rate): the percent decrease in the price.
Example: The day after Valentine's Day, Andrew bought roses that were originally $20 for $10. He got a 50% discount.

Solving Markup and Markdown Problems

$$Selling\ Price = (1 + m)(Original\ Price)$$

$50 = (1 + .25)(40)

$$Selling\ Price = (1 - m)(Original\ Price)$$

$10 = 1 - .50 (20)

(m is the markup or markdown rate)

Part = (%)·(whole)

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GUIDED PRACTICE:

Steps for Solving Percent Problems Involving Markups and Markdowns

1. Read the problem carefully and identify the important pieces of information: original price, markup (markdown) rate, and selling price.
2. Write an equation based on the word problem.
3. Solve the equation and interpret your answer.

MARK UP!!

Lids buys hats from New Era (hat manufacturer) for $25.00. Lids then applies a 40% markup rate. If you use your allowance to purchase the hat at Lids, how much will you pay (excluding tax)?

SELLING PRICE = (1+m)(ORIG. PRICE)

SELLING PRICE = (1+.4)(25.00)

= (1.4)(25.00)

= 35

You will pay $35.00 for your hat

Amazon buys *Big Hero 6* from Disney for $12.00 and then applies a markup rate of 65%. How much would you pay for the movie if you bought it from Amazon (excluding tax)?

SELLING PRICE = (1+m)(ORIG. PRICE)

SELLING PRICE = (1+.65)(12)

SELLING = (1.65)(12)

= 19.80

Big Hero 6 cost $19.80

MARK DOWN!

A 65-inch Samsung TV was originally priced at $900.00, but was selling at a 60% markdown rate. What is the selling price (excluding tax)?

SELLING PRICE = (1-.60)(900)

= (.4)(900)

= 360

The TV will cost $360

Andy was shopping at Gap and saw that skinny jeans that were originally on sale for $56.00 had been discounted by 40%. He only had $30.00 on him. Did he have enough to buy the jeans? How much would they cost (before tax).

SELLING PRICE = (1-.4)(56.00)

= (.6)(56.00)

= 33.60

Andy doesn't have enough money! Jeans cost $33.60

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DOUBLE DISCOUNT

On Black Friday, a $300 mountain bike was discounted by 30% and then discounted another 10% for shoppers who arrived before 8AM. What is the sale price for those who decide to sleep in? What do the early birds pay?

SELLING PRICE $= (1-.30)(300)$

$= (.7)(300)$

$= 210$

SLEEPERS PAY $210

$(.7)(.9)(300)$

SELLING $= (1-.1)(210)$

$= (.9)(210)$

$= \$189$

EARLY BIRDS PAY $189

Foot Locker was having a season ending sale. All football cleats were discounted 40%, and there were discontinued styles that were discounted an additional 20%. If I bought one of these pairs of cleats that were originally priced at $140, how much did I pay (before tax) after both discounts?

SELLING PRICE $= (1-.40)(140)$

$= (.6)(140)$

$= 84$ ← 1st discount

$= (1-.20)(84)$

$= (.8)(84)$

$= 67.20$

CLEATS ARE $67.20

% unknown

A car that sells normally for $20,000 is on sale for $16,000. What percent of the original price is the sale price? What is the discount rate?

Selling price $= (\%)$ (original price)

$\frac{16{,}000}{20{,}000} = \frac{(\%)(20{,}000)}{20{,}000}$

$.8 = \%$

80% of original.

Discount is 20%

Nerf sells foam footballs to Target for $5.00, and they sell them to consumers for $9.00. What is the markup rate?

$\frac{9}{5} = \frac{(\%)\,5}{5}$

$1.8 = \%$

180%

markup $= 1 + m = 1.80$

Markup is 80%

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Write an equation to determine the selling price, p, of an item that is originally priced s dollars after a 25% markup.

Create a table showing 5 possible pairs of solutions to the equation.

Price of an item before markup, s (in dollars)	Price of an item after markup, p (in dollars)
10	12.50
20	25.00
30	37.50
40	50.00
50	62.50

×1.25 ×1.25 ×1.25 ×1.25 ×1.25

UNIT RATE = 1.25

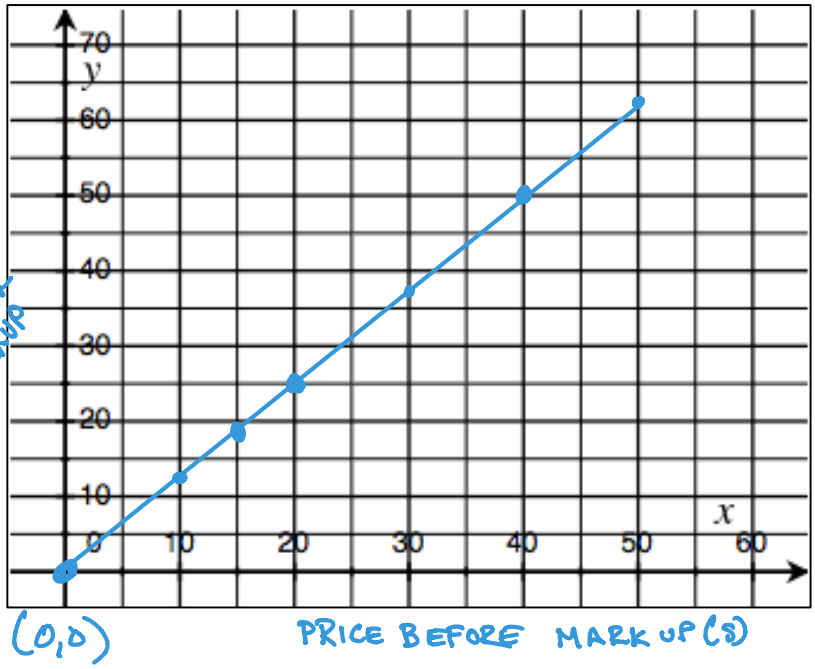
$p = 1.25s$

PROPORTIONAL

- straight line
- goes through (0,0)

$1.25s = p$

Create a graph of the equation.



(20,25)

When wholesale is $20, selling price is $25

When wholesale is $15, selling price $18.75

Interpret the point (0,0).

When the wholesale price is $0, the selling price is $0.

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Closure:

Use the following table to calculate the markup or markdown rate. Show your work. Is the relationship between the original price and the selling price proportional? Why or why not?

Original Price, *m* (in dollars)	Selling Price *p* (in dollars)
1,750 x .8	1,400
1,500 x .8	1,200
1,250 x .8	1,000
1,000 x .8	800
750 x .8	600

Markdown by 20%

Markdown by 25%

$\frac{1750}{1400} = 1.25$

$1+m$

$1-m$

$m \times .8 = p$

$p = .8m$

$\frac{1400}{1750} = (\%)\ \frac{1750}{1750} = .8$

Independent Practice:

Anastasia went shopping at Swords R Us and decided to purchase new foil blades for 25% off the original price. If she buys the swords today, she will receive an additional 5% off. If the blades were originally priced at $150, how much did she pay with her discount? $150(.75)(.95)$ $106.88 $105.00 ← 30%	Mel Cotton's buys skis from a manufacturer for a wholesale price of $57.00. The store's markup rate is 50%. What is the price Mel Cotton's charges its customers for the skis? $85.50 What percent of the original price is the selling price? 150%

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A Blu-ray player is originally priced at $85. The store is advertising 15% off and you have a coupon that will give you 25% off any one item in the store. How much will the Blu-ray player cost with both discounts?

$54.19

It's time to redecorate the bedroom…you are at Target shopping for new sheets and see the sheets you MUST have—Frozen sheets with the reversible Anna/Elsa pillow cover. Good news-they are on sale for 30% off. If you pay $42.00 for them, what was the original price?

Selling price = .7(x)

$\frac{42}{.7} = \frac{.7x}{.7}$

$x = 60$

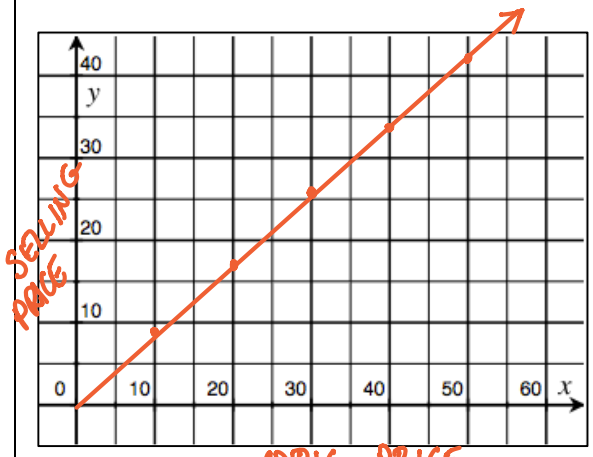
$60 $54.60

Write an equation to determine the selling price, *p*, on an item that is originally priced *s* dollars after a markdown of 15%.

Complete the table below.

Price of an item before markdown, *s*, (in dollars)	Price of item after markdown, p, (in dollars)
10 x.85	8.50
20 x.85	17.00
30 x.85	25.50
40 x.85	34.00
50 x.85	42.50

Graph the equation you created to the left.



$p = .85s$

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Activating Prior Knowledge:

We can solve problems involving percents.

What percent of 40 is 22?	What percent of 30 is 21?

Teacher Notes:

Should help that we did markdowns with fractions earlier…maps to lesson 7, grade 7, module 4.
HW is from Lesson 7??

Jessica wants a new computer. She likes two different computers...one costs $200 and the other costs $300. She tells her dad that the computer that is more expensive is 50% more than the cost oft he other computer. Is she right?

K,

Yes!

50% of 200 is 100

50% increase

33% ?