Percentages

Warm-Up!

Try these problems before watching the lesson.

1. What number is 10% of 20% of 30% of 40? Express your answer as a decimal to the nearest hundredth.

2. A restaurant automatically adds an 18% tip to the bill. If the tip was $9, what was the bill before the tip was added, in dollars?

3. A 6% rate increase by a local media cable company resulted in an increase of $1.20 per month on a family's bill. How many dollars was the monthly bill before the increase?

4. A stock loses 10% of its value on Monday. On Tuesday it loses 20% of the value it had at the end of the day on Monday. What is the overall percent loss in value from the beginning of Monday to the end of Tuesday?

5. The original price of an item was $50. The store deducted 20%, and then deducted an additional 20% off the reduced price. How many dollars more would a consumer save if the store had simply reduced the original price by 40%?

The Problems

Take a look at the following problems and follow along as they are explained in the video.

6. A toy store manager received a large order of Mr. Slinkums just in time for the holidays. The manager places 20% of them on the shelves, leaving the other 120 Mr. Slinkums in storage. How many Mr. Slinkums were in this order?

7. Edward is one of the six people who each are writing 180 math problems. When he solves every problem, he gets an incorrect answer for 10% of the problems that he wrote and for 5% of the problems written by the others. For what fraction of the problems does Edward get the wrong answer? Express your answer as a common fraction.

8. The length of a rectangle is twice its width. If the length is decreased by 20% and the width is increased by 20%, by what percent is the area decreased?

Piece It Together

Use the skills you practiced in the warm-up and strategies from the video to solve the following problems.

9. After deducting his 10% commission, Jun sent $27 to the newspaper dealer for whom he delivers papers. If each newspaper sells for 20 cents, how many papers did Jun deliver?

10. During the first year, ABC's stock price starts at $100 and increases 100%. During the second year, its stock price goes down 25% from its price at the end of the first year. What is the price of the stock, in dollars, at the end of the second year?

11. Otto's investment portfolio consisted of shares of internet stock and copper stock. During the year, the value of his internet shares increased 10%, but the value of his copper shares decreased from $10,000 to $9,000. During the same year, the total value of his portfolio increased by 6%. What was the dollar value of his internet shares at the end of the same year?

12. A consumer report revealed the following information about three tubes of toothpaste. Bright is 60% more expensive than Fresh and has 25% less volume than Glow. Glow is 25% less expensive than Bright and has 33.$\overline{3}$% more volume than Fresh. Fresh costs $1.00 per unit of volume. What is the number of cents per unit of volume of Glow?

Optional Extension

To extend your understanding and have a little fun with math, try the following activities.

Consider each of the following shopping scenarios and make a decision for each. Be prepared to defend your answer with math!

a. Would you rather use a 70% discount coupon or a 40% discount, 20% discount, then a 10% discount coupon? (Or are both options going to provide an equal discount?)
b. Would you rather use a coupon worth $20 off your entire purchase or 20% off your entire purchase? (Or are both options going to provide an equal discount?)
c. Would you rather use a 5% discount coupon but have to pay 5% shipping for the item purchased, or just pay the flat cost of the item with no discount but a free shipping promotion?
d. Come up with your own 'would you rather' scenario that someone might not predict or expect to be the better mathematical option.