# Sales and Markups



Three tiles, about 7 minutes each with its Let me try a few, then the exit ticket. Students take a percent off with one multiplier, add a markup on, and work backward to an original price by asking percent of what.

| | |
|---|---|
| TIME | 25 minutes: three tiles at about 7 minutes each, then the exit ticket |
| WHO | 7th grade, about age 12. Follows Lesson 3, Tax, Tips, and Fees. |
| MATERIALS | The Deep Dive 5 lesson hub and its three tiles (two-color percent bar, multiplier table), the worksheet (PDF), pencil. |
| PRIOR KNOWLEDGE | Adding a percent on with one multiplier (Lesson 3); finding the whole (Lesson 2). |
| STANDARDS | NC.7.RP.3. |
| KEEP OUT | A formula to memorize. Percent error. |

## Learning goals

1. Find a discount and a sale price, and explain why 30 percent off is times 0.70.
2. Find a markup and a selling price with one multiplier.
3. Choose the multiplier for any change up or down.
4. Find an original price by asking percent of what.

## Vocabulary: say both, every time

The rule for the whole lesson: whenever the adult or the student says a math word, they follow it with the plain-English version. Proper term first, plain English second, until the student does it without being asked.

| TERM | LOOKS LIKE | PLAIN ENGLISH |
|---|---|---|
| Discount | 30% off $60 | The amount taken off. |
| Sale price | $60 times 0.70 | What is left. |
| Markup | 45% on $20 | What the store adds. |
| Original price | $20 for the shirt | The price before any change. |

> THE ONE SENTENCE TO SAY OUT LOUD
>
> Percent of what?

## Lesson timeline (25 minutes)

| | |
|---|---|
| 0:00 to 0:07 | Tile 1, Discounts. Finn's hook, the $60 shoes two ways, the two-color bar. Let me try a few. |
| 0:07 to 0:14 | Tile 2, Markups. The $20 hoodie, compared with tax. The multiplier table. Let me try a few. |
| 0:14 to 0:21 | Tile 3, The Original Price. The $12 shirt built up to $20, then Elle's warning: $16.80 is wrong. Let me try a few, including the shirt mistake problem. |
| 0:21 to 0:25 | Exit ticket. Back on the hub. Success looks like $60 and of the original price, not of $12. |

## Misconceptions to listen for

- **Times 0.30 is the sale price.** That is the discount. You pay 0.70.
- **Add the discount back to the sale price to get the original.** The percent was of the original, so build up from the percent left.
- **Markups and discounts cancel if the percents match.** They are percents of different wholes (Lesson 6 makes this a whole tile).
- **A 100 percent markup is impossible.** It doubles the price.

## Support and stretch

### Support

For every discount, say the percent left out loud before multiplying. For working backward, write the three pieces and mark which is missing.

### Stretch

Ask for the original price when a 7 percent tax made a total of $42.80. Ask whether 50 percent off then 50 percent off is free.

## Where this goes next

Lesson 5: percent increase and decrease. The same change can be a bigger or smaller percent depending on where it started.

> THE HABIT TO BUILD
>
> Before you multiply, ask: percent of what?