



PRINTABLES
PREMIUM EDUCATIONAL RESOURCES

Markups, Markdowns & Money

Percent Application Mazes Bundle

Grade 7 | 3 Themed Levels | 36 Self-Checking Problems

CCSS.ALIGNED

7.RP.A.3

Maze 1

Back-to-School Sale

Markdowns Only

Maze 2

Holiday Shopping

Markups Only

Maze 3

Summer Business

Mixed Scenarios

What's Inside: 3 Printable Maze Worksheets • 3 Answer Keys • 36 Detailed Solutions • CCSS Alignment Chart • Teacher Tip Sheet

Also Includes: Concept Review • Discussion Prompts • Exit Tickets • Common Mistakes Guide • Extension Projects

UM PRINTABLES

Premium Educational Resources | Teachers Pay Teachers

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PREVIEW

PREVIEW

TPT Preview



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PREVIEW
TPT Preview

2. Key Formulas

There are six core formulas students need for this bundle. Three are for markups (and their inverses), and three are for markdowns (and their inverses). Each formula is derived from the basic percent equation. Encourage students to memorize the **structure** rather than the formula itself - once they understand the underlying relationship, they can reconstruct any formula on demand.

MARKDOWN - FINDING SALE PRICE

$$\text{Sale Price} = \text{Original Price} \times (1 - \text{Percent Markdown})$$

$$\text{Example: } \$40 \text{ with } 25\% \text{ markdown} = \$40 \times 0.75 = \$30$$

MARKDOWN - FINDING ORIGINAL PRICE

$$\text{Original Price} = \text{Sale Price} / (1 - \text{Percent Markdown})$$

$$\text{Example: } \$30 \text{ sale price after } 25\% \text{ markdown} = \$30 / 0.75 = \$40$$

MARKDOWN - FINDING PERCENT

$$\text{Percent Markdown} = (\text{Original Price} - \text{Sale Price}) / \text{Original Price} \times 100$$

$$\text{Example: } \$40 \text{ original, } \$30 \text{ sale} = \$10 / \$40 \times 100 = 25\%$$

MARKUP - FINDING RETAIL PRICE

$$\text{Retail Price} = \text{Wholesale Price} \times (1 + \text{Percent Markup})$$

$$\text{Example: } \$40 \text{ wholesale with } 60\% \text{ markup} = \$40 \times 1.60 = \$64$$

MARKUP - FINDING WHOLESALE PRICE

$$\text{Wholesale Price} = \text{Retail Price} / (1 + \text{Percent Markup})$$

$$\text{Example: } \$64 \text{ retail after } 60\% \text{ markup} = \$64 / 1.60 = \$40$$

MARKUP - FINDING PERCENT

$$\text{Percent Markup} = (\text{Retail Price} - \text{Wholesale Price}) / \text{Wholesale Price} \times 100$$

$$\text{Example: } \$64 \text{ retail, } \$40 \text{ wholesale} = \$24 / \$40 \times 100 = 60\%$$

Mixed & Multi-Step Formulas (for Maze 3)

Maze 3 introduces three additional concepts that combine markups and markdowns with business math: profit, profit margin, break-even analysis, and stacked discounts. These formulas extend student thinking beyond single-step problems.

PROFIT & PROFIT MARGIN

$$\text{Profit} = \text{Total Revenue} - \text{Total Costs}$$

$$\text{Profit Margin (\%)} = (\text{Profit} / \text{Revenue}) \times 100$$

Profit margin measures how much of each dollar earned is kept as profit.

Visual Diagrams: Markups & Markdowns

Visual representations help many students grasp abstract percent concepts. The diagrams below illustrate the relationship between wholesale/retail prices (markup) and original/sale prices (markdown). Print these as a student reference, project them during instruction, or use them as discussion starters.

Markup Diagram: Wholesale to Retail

In a markup, the store buys an item at a wholesale price and adds a markup amount to determine the retail price. The markup is always calculated as a percentage of the **WHOLESALE** price (the price that came first).

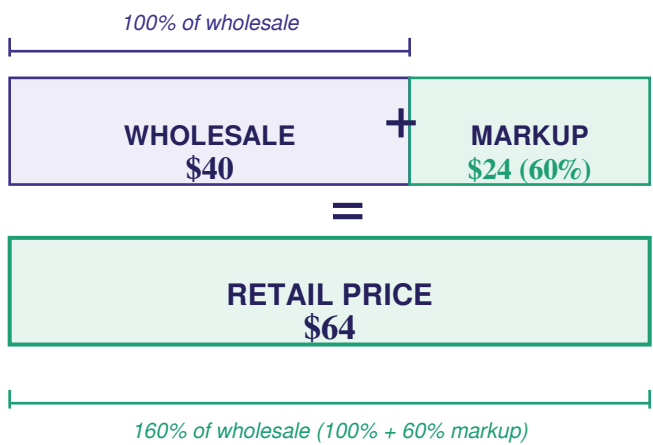


Figure 1: A 60% markup on a \$40 wholesale price. The retail price equals 160% of the wholesale price (the original 100% plus the 60% markup).

Markdown Diagram: Original to Sale Price

In a markdown, the store starts with an original price and subtracts a markdown amount to determine the sale price. The markdown is always calculated as a percentage of the **ORIGINAL** price (the price that came first).

Maze 1 - Back-to-School Sale - Worksheet

Directions: Solve each problem below and find your answer in the maze grid (next page). Each answer choice shows which problem to go to next. Start at Problem 1 and continue until you reach EXIT. If you return to a problem you already solved, you made a mistake - go back and check your work!

P 1 A backpack originally costs \$40. It is on sale at 25% off. What is the sale price?

P 2 A pair of sneakers originally costs \$80. After a 30% markdown, what is the sale price?

P 3 A scientific calculator is on sale for \$36 after a 20% markdown. What was the original price?

P 4 A geometry set is on sale for \$51 after a 40% markdown. What was the original price?

P 5 A jacket originally costs \$60. The sale price is \$45. What is the percent markdown?

P 6 A pair of jeans originally costs \$90. The sale price is \$63. What is the percent markdown?

P 7 A desk lamp originally costs \$120. After a 35% markdown, what is the sale price?

P 8 A graphing calculator is on sale for \$68, marked down from \$80. What is the percent markdown?

P 9 A bicycle originally costs \$150. The sale price is \$105. What is the percent markdown?

P 10 A set of novels is on sale for \$96 after a 20% markdown. What was the original price?

P 11 A microscope originally costs \$200. After a 45% markdown, what is the sale price?

P 12 A music player originally costs \$75. The sale price is \$54. What is the percent markdown?



Maze 1 - Back-to-School Sale - Maze Grid

Your Path: P1 → ____ → ____ → ____ → ____ → ____ → ____ → ____ → ____ → ____ → EXIT

PROBLEM 1 STEP 1

START HERE

- A \$25.00 → P2
- B \$30.00 → P5
- C \$35.00 → P7
- D \$32.00 → P11

PROBLEM 2 STEP 6

- A \$50.00 → P1
- B \$48.00 → P6
- C \$56.00 → P3
- D \$24.00 → P9

PROBLEM 3 STEP 7

- A \$45.00 → P7
- B \$43.20 → P2
- C \$54.00 → P4
- D \$50.00 → P10

PROBLEM 4 STEP 12

- A \$76.50 → P3
- B \$85.00 → EXIT
- C \$90.00 → P8
- D \$127.50 → P12

PROBLEM 5 STEP 2

- A 25% → P9
- B 30% → P1
- C 15% → P6
- D 20% → P12

PROBLEM 6 STEP 5

- A 27% → P5
- B 35% → P8
- C 30% → P2
- D 33% → P11

PROBLEM 7 STEP 8

- A \$78.00 → P11
- B \$42.00 → P3
- C \$85.00 → P6
- D \$80.00 → P8

PROBLEM 8 STEP 11

- A 12% → P3
- B 18% → P7
- C 20% → P12
- D 15% → P4

PROBLEM 9 STEP 3

- A 45% → P2
- B 30% → P10
- C 35% → P5
- D 25% → P8

PROBLEM 10 STEP 4

- A \$115.20 → P1
- B \$100.00 → P3
- C \$120.00 → P6
- D \$125.00 → P7

PROBLEM 11 STEP 9

- A \$90.00 → P2
- B \$110.00 → P12
- C \$155.00 → P7
- D \$100.00 → P9

PROBLEM 12 STEP 10

- A 28% → P8
- B 21% → P4
- C 32% → P11
- D 25% → P7

Maze 1 - Back-to-School Sale - Maze Grid (Answer Key)

The correct path is highlighted in teal. Correct answers are marked with green circles and bold text.

PROBLEM 1 STEP 1	PROBLEM 2 STEP 6	PROBLEM 3 STEP 7
START HERE A \$25.00 -> P2 B \$30.00 -> P5 C \$35.00 -> P7 D \$32.00 -> P11	A \$50.00 -> P1 B \$48.00 -> P6 C \$56.00 -> P3 D \$24.00 -> P9	A \$45.00 -> P7 B \$43.20 -> P2 C \$54.00 -> P4 D \$50.00 -> P10
PROBLEM 4 STEP 12	PROBLEM 5 STEP 2	PROBLEM 6 STEP 5
A \$76.50 -> P3 B \$85.00 -> EXIT C \$90.00 -> P8 D \$127.50 -> P12 TO EXIT	A 25% -> P9 B 30% -> P1 C 15% -> P6 D 20% -> P12	A 27% -> P5 B 35% -> P8 C 30% -> P2 D 33% -> P11
PROBLEM 7 STEP 8	PROBLEM 8 STEP 11	PROBLEM 9 STEP 3
A \$78.00 -> P11 B \$42.00 -> P3 C \$85.00 -> P6 D \$80.00 -> P8	A 12% -> P3 B 18% -> P7 C 20% -> P12 D 15% -> P4	A 45% -> P2 B 30% -> P10 C 35% -> P5 D 25% -> P8
PROBLEM 10 STEP 4	PROBLEM 11 STEP 9	PROBLEM 12 STEP 10
A \$115.20 -> P1 B \$100.00 -> P3 C \$120.00 -> P6 D \$125.00 -> P7	A \$90.00 -> P2 B \$110.00 -> P12 C \$155.00 -> P7 D \$100.00 -> P9	A 28% -> P8 B 21% -> P4 C 32% -> P11 D 25% -> P7

Maze 1 - Back-to-School Sale - Detailed Solutions

Each solution below walks through the full reasoning process for one problem. The problems are presented in **path order** - the order in which a student solving correctly will encounter them. Use these solutions for student conferences, reteaching, or to send home to families who want to support their child's learning.

P1 Problem 1 | Step 1 of 12 in the correct path

Problem: A backpack originally costs \$40. It is on sale at 25% off. What is the sale price?

Formula: Sale Price = Original Price $\times$ (1 - % Markdown)

Step 1: Identify the original price: \$40

Step 2: Identify the percent markdown: 25%

Step 3: Calculate the markdown amount: $\$40 \times 0.25 = \$10$

Step 4: Subtract the markdown from the original price: $\$40 - \$10 = \$30$

Step 5: Sale price = \$30

Correct Answer: B) \$30.00 → Go to P5

P5 Problem 5 | Step 2 of 12 in the correct path

Problem: A jacket originally costs \$60. The sale price is \$45. What is the percent markdown?

Formula: % Markdown = (Original Price - Sale Price) / Original Price $\times$ 100

Step 1: Identify the original price: \$60

Step 2: Identify the sale price: \$45

Step 3: Calculate the markdown amount: $\$60 - \$45 = \$15$

Step 4: Divide the markdown by the original price: $\$15 / \$60 = 0.25$

Step 5: Convert to a percent: $0.25 \times 100 = 25\%$

Correct Answer: A) 25% → Go to P9

P9 Problem 9 | Step 3 of 12 in the correct path

Problem: A bicycle originally costs \$150. The sale price is \$105. What is the percent markdown?

Formula: % Markdown = (Original Price - Sale Price) / Original Price $\times$ 100

Step 1: Identify the original price: \$150

Step 2: Identify the sale price: \$105

Step 3: Calculate the markdown amount: $\$150 - \$105 = \$45$

Step 4: Divide the markdown by the original price: $\$45 / \$150 = 0.30$

Step 5: Convert to a percent: $0.30 \times 100 = 30\%$

Maze 3 - Summer Business - Worksheet

Directions: Solve each problem below and find your answer in the maze grid (next page). Each answer choice shows which problem to go to next. Start at Problem 1 and continue until you reach EXIT. If you return to a problem you already solved, you made a mistake - go back and check your work!

P 1 Maya sells friendship bracelets. She makes them for \$2 each and sells them for \$5 each. What is her percent markup?

P 7 A small T-shirt business had profit of \$90 on revenue of \$360. What is the profit margin (profit as % of revenue)?

P 2 A lemonade stand has fixed costs of \$12. Each cup costs \$0.25 to make and sells for \$1.00. How many cups must be sold to break even?

P 8 A snack bar's break-even point is 80 sandwiches. Fixed costs are \$640. What is the contribution margin per sandwich?

P 3 A swimsuit originally costs \$80. It goes on sale at 25% off, then an additional 10% off the sale price. What is the final price?

P 9 A vendor buys sunglasses for \$30 wholesale, marks them up 60%, then puts them on sale at 20% off. What is the final sale price?

P 4 A bike shop buys a helmet for \$25 wholesale and sells it for \$45 retail. What is the percent markup?

P 10 A summer camp sells day passes for \$40 each. Each camper costs \$15 to serve. How many campers are needed to cover \$1,500 in fixed costs?

P 5 Liam's lawn-mowing business had revenue of \$1,200 last month. His costs totaled \$900. What was his total profit?

P 11 A booth at the farmers market had revenue of \$500 and costs of \$350. What is the profit margin (profit as % of revenue)?

P 6 A surf shop has a beach chair originally priced at \$100. It is on sale at 20% off, then 25% off the sale price. What is the final price?

P 12 A pool supply store has a beach ball originally priced at \$80. It is on sale at 30% off, then an extra 15% off with a coupon. What is the final price?

Quick Reference: Formula Sheet

Print this page double-sided with the Vocabulary Glossary for a complete student reference card. Students can keep it in their math binder for the duration of the percent applications unit.

Markdown Formulas (Discounts)

Find	Formula	Example
Sale Price	$\text{Sale Price} = \text{Original} \times (1 - \% \text{ Markdown})$	\$40 original, 25% off: $\$40 \times 0.75 = \$30$
Original Price	$\text{Original} = \text{Sale Price} / (1 - \% \text{ Markdown})$	\$30 sale, 25% off: $\$30 / 0.75 = \$40$
% Markdown	$\% \text{ Markdown} = (\text{Original} - \text{Sale}) / \text{Original} \times 100$	\$40 orig, \$30 sale: $\$10 / \$40 \times 100 = 25\%$
Markdown Amount	$\text{Markdown} = \text{Original} - \text{Sale Price}$	$\$40 - \$30 = \$10$

Markup Formulas (Retail Pricing)

Find	Formula	Example
Retail Price	$\text{Retail} = \text{Wholesale} \times (1 + \% \text{ Markup})$	\$40 wholesale, 60% markup: $\$40 \times 1.60 = \$64$
Wholesale Price	$\text{Wholesale} = \text{Retail} / (1 + \% \text{ Markup})$	\$64 retail, 60% markup: $\$64 / 1.60 = \$40$
% Markup	$\% \text{ Markup} = (\text{Retail} - \text{Wholesale}) / \text{Wholesale} \times 100$	\$64 retail, \$40 wholesale: $\$24 / \$40 \times 100 = 60\%$
Markup Amount	$\text{Markup} = \text{Retail Price} - \text{Wholesale Price}$	$\$64 - \$40 = \$24$

Inside the Complete Resource

Markups, Markdowns & Money • Percent Application Mazes Bundle

87	3	36	12
PAGES	MAZES	MAZE PROBLEMS	BONUS PROBLEMS

Grade 7 • CCSS 7.RP.A.3

Three themed, self-checking percent-application mazes are supported by concept review, worked examples, teacher guidance, reflection, practice, and reference materials.

WHAT'S IN THE 87-PAGE PDF

SECTION	PAGES	WHAT'S INCLUDED
Front Matter & Navigation	1-6	Cover, table of contents, and introductory navigation.
Teacher Resources	7-19	Welcome, bundle overview, quick-start guide, implementation strategies, differentiation, and CCSS alignment.
Concept Review	20-28	Markup/markdown concepts, formulas, break-even and profit concepts, worked examples, misconceptions, vocabulary, and visual diagrams.
Maze 1: Back-to-School Sale	29-39	Markdown-focused maze with worksheet, grid, answer key, detailed solutions, and student reflection/real-world connection.
Maze 2: Holiday Shopping	40-50	Markup-focused maze with worksheet, grid, answer key, detailed solutions, and student reflection/real-world connection.
Maze 3: Summer Business	51-62	Mixed business scenarios covering profit margin, break-even, and stacked discounts, with worksheet, grid, answer key, detailed solutions, and reflection.
Careers & Interactive	63-67	Eight real-world math career profiles, discussion prompts, and exit-ticket activities.
Common Mistakes & Extensions	68-71	Eight common misconceptions with reteaching guidance, plus five real-world extension projects with rubrics.
Assessment & Bonus Practice	72-74	Assessment rubric plus 12 additional practice problems and an answer key.
Family & Reference	75-84	Family guide, formula/reference sheets, business-math formulas, shopping scavenger hunt materials, worksheet pages, and FAQs.
About & Closing	85-87	About UM Printables, website/contact information, and closing thank-you page.

3 THEMED MAZES

Back-to-School • Holiday Shopping • Summer Business

TEACHER SUPPORT

Implementation • Differentiation • CCSS Alignment • Rubric

STUDENT SUPPORT

Concept Review • Solutions • Reflection • Bonus Practice

CCSS.MATH.CONTENT.7.RP.A.3

Use proportional relationships to solve multistep ratio and percent problems

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