Redone Lesson Plan

Warm-up: Simple % Problems (Conversions)
Objective: TSWBAT: Use mathematical reasoning to solve real-world problems

Cue: Tell students: "Trident commercials say that 4 out of 5 doctors surveyed recommend chewing trident." (Commercials)

Ask students questions (Do on paper):
- Does 4/5 seem like enough to base your decision on?
- What if it were a life/death situation?
- What % (If student didn't get already)
- Would you purchase the product, list reasons supporting your answer

- Do a Think-Pair-Share to allow verbal discussion

Teaching Strategy
1. Present Graph

Suggestion: Use Technology after renovation
(Put on computer + link to TV or overhead)
Explain: graph is results of a survey which asked parents how many hours each week they assist with homework.

Ask: If 88 parents said they helped 1-4 hours, how many total parents took part in the survey? ( )

1) Allow students to work in groups to form conclusion
2) Students present 1) Answer
   2) Justification of answer

Solution: \[
\frac{a}{b} = \frac{p}{100} \\
\frac{88}{x} = \frac{32}{100} \quad \text{(cross multiply/divide)}
\]
\[x = 275\]

Answer: 275 parents were surveyed.

Ex 2: Ask if Book originally costs $36.00, but is on sale for $27.00, what is the percent of discount (Groups again: solve like before)

My way: \[
\frac{27}{36} = \frac{p}{100} = \text{sale price} \quad \frac{100\% - \text{sale \%}}{\text{Discount \%}}
\]

Their way:

Ex 3: A sweatshirt is originally $22.68. You paid $16.80. The sign says "35% off". Did you get that discount?

Discuss w/ groups. Allow groups all strategies.
Redone L.R. Pg 2

Guided Practice Pg 365 1-2 (in partners)

Independent Practice Pg 365 3-9

Closure: Do problem #14

Explain how you arrived at your answer and whether it not your answer makes sense.
Problem Solving

Standard

Instructional programs from prekindergarten through grade 12 should enable all students to—

1. Build new mathematical knowledge through problem solving
2. Solve problems that arise in mathematics and in other contexts
3. Apply and adapt a variety of appropriate strategies to solve problems
4. Monitor and reflect on the process of mathematical problem solving

Reasoning and Proof

Standard

Instructional programs from prekindergarten through grade 12 should enable all students to—

1. Recognize reasoning and proof as fundamental aspects of mathematics
2. Make and investigate mathematical conjectures
3. Develop and evaluate mathematical arguments and proofs
4. Select and use various types of reasoning and methods of proof

Communication

Standard

Instructional programs from prekindergarten through grade 12 should enable all students to—

1. Organize and consolidate their mathematical thinking through communication
2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others
3. Analyze and evaluate the mathematical thinking and strategies of others
4. Use the language of mathematics to express mathematical ideas precisely

Connections

Standard

Instructional programs from prekindergarten through grade 12 should enable all students to—

1. Recognize and use connections among mathematical ideas
2. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
3. Recognize and apply mathematics in contexts outside of mathematics

Representation

Standard

Instructional programs from prekindergarten through grade 12 should enable all students to—

1. Create and use representations to organize, record, and communicate mathematical ideas
2. Select, apply, and translate among mathematical representations to solve problems
3. Use representations to model and interpret physical, social, and mathematical phenomena
Problem Solving Using %

Warm Up: Simple % - list problem solving steps.

Objective: Use mathematical reasoning to solve real world problems.

Cues: Trident commercials. 4/5 doctors recommend chewing trident. If 100 doctors surveyed, how many choose trident?

\[
\frac{4}{5} = \frac{x}{100} \quad \text{4/5 seem like a lot.}
\]

\[
\frac{400}{5} = x \quad \text{80/100 - not so good.}
\]

80 = x - why? - Make you buy the product.

Best Shot: Survey of parents who help their students w/ homework. 88 said helped 1-4 hours - how many were asked?

\[
\frac{a}{b} = p
\]

88/b = 32% or 32/100

\[
\frac{b}{88} = \frac{32}{100}
\]

b = 8800/32

b = 275 survey'd

\[\text{(ii) Discount} = \text{Regular Price} - \text{Sale Price}\]

\[
\text{Reg} = \$36.00 \quad \text{book - reg} \quad \$36 - 27 = \$9
\]

27.00 - sale

What is the discount %? 9/36 = 25%

\[\text{(i) $16.80 - sweatshirt you paid.}\]

Sign = 35%

This week = REG = 22.68 - did you get discount?

\[
\frac{a}{b} = p
\]

\[
\frac{16.80}{b} = 35% \text{ or } \frac{100}{b}
\]

\[
\frac{16.80}{100} = \frac{35}{b}
\]

b = 48
Discount = Reg - Sale
= 22.68 - 16.80
= 5.88

\[ \frac{a}{b} = \frac{5.88}{b} \]

\[ \frac{5.88}{b} \]

\[ \frac{25}{100} = \frac{5.88}{b} \]

\[ 5.88 \times \frac{100}{25} = b \times \frac{5.88 \times 5.88}{b} \]

\[ 23.83 = b \]

\[ P = \frac{5.88}{22.68} \]

\[ P = 25.9\% \text{ - not total discount} \]

Guided Pg 365 1-2, in groups / review

T.P. 365 3-6 alone

Closure Review T.P. solve +
15 - explain each step

H.W.
Guided Practice

CHECK for Understanding

1. **Shoe Sale**  You pay $38.15 for a pair of tennis shoes. The discount was $16.35.
   a. What is the original price?
   b. Based on the original price, what is the discount percent?

2. **Shoe Sale**  You are shopping for shoes and see the sign at the right. Explain how you could find the original price of the shoes.

Independent Practice

**Music**  In Exercises 3 and 4, use the following.

You take a survey in your classroom about favorite types of music. The circle graph shows the percent of students in each type. Nine students said that country was their favorite.

3. How many students were surveyed?
4. How many students said
   a. pop?
   b. rhythm and blues?
   c. easy listening?

5. **Spanish**  In 1992, about 410,000 Americans took a course in Spanish. This represented 41% of those who took a language course. How many took a language course?
   (Source: Modern Language Association)

6. **French**  In 1992, 27.4% of the Americans who took a language course took a course in French. Use the result of Exercise 5 to find the number of Americans who took a course in French.

**Pay Phones**  In Exercises 7–9, use the following.

The circle graph shows the categories and the amounts of money that make up the yearly income for the average pay phone. Coin revenue makes up 35% of the yearly income.
   (Source: USA Today)

7. What is the yearly income for the average pay phone?
8. Describe another way to find the yearly income.
9. Find the percent of yearly income of
   a. calling and credit cards.
   b. collect calls.
   c. third-party calls.
Where is Your Radio? In Exercises 10–13, use the following information.

The table shows the numbers, in millions, of radios in specific locations in American households. The percent of radios in bathrooms is about 4.3%.

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Radios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrooms</td>
<td>172.3</td>
</tr>
<tr>
<td>Living rooms</td>
<td>63.3</td>
</tr>
<tr>
<td>Kitchens</td>
<td>46.2</td>
</tr>
<tr>
<td>Bathrooms</td>
<td>14.7</td>
</tr>
<tr>
<td>Dining rooms</td>
<td>13.3</td>
</tr>
<tr>
<td>Other</td>
<td>33.2</td>
</tr>
</tbody>
</table>

10. How many radios do Americans own?
11. Find the percent of radios in bedrooms.
12. Find the percent of radios in living rooms.
13. Find the percent of radios in kitchens.

14. Discount You buy a pair of rollerblades. The sign at the sporting goods store stated that the price of rollerblades had been discounted 25%. The discount was $21.40. What was the regular price of the rollerblades?

Geometry In Exercises 15 and 16, the blue region’s percent of the total area is given.

15. The blue region has an area of 16 square units. What is the area of the entire region?

16. The yellow region has an area of 16 square units. What is the area of the entire region?

Integrated Review

Making Connections within Mathematics

Proportions In Exercises 17–24, solve the proportion.

17. \(\frac{95}{x} = \frac{20}{100}\)
18. \(\frac{50}{100} = \frac{84}{y}\)
19. \(\frac{4}{90} = \frac{60}{100}\)
20. \(\frac{m}{40} = \frac{80}{100}\)
21. \(\frac{2}{60} = \frac{x}{100}\)
22. \(\frac{y}{100} = \frac{3}{5}\)
23. \(\frac{45}{50} = \frac{5}{100}\)
24. \(\frac{36}{90} = \frac{r}{100}\)

Exploration and Extension

25. Banking You deposit $470 into a savings account. At the end of one year, your account will earn interest at the rate of 3.5%. A shortcut for finding your new balance is

\[470 \times (1.035) = \text{balance} \]

Use the Distributive Property to explain how you could obtain this shortcut.

26. Banking In Exercise 25, suppose that you leave the money in the account for two years. During that time, you make no additional deposits or withdrawals. What is your balance at the end of two years?