



Toilet Paper Percent

(Percents Using “Ten Frames”)



Teacher Notes

Objective: The student will be able to solve a percent equation using only a ten sheet strip of toilet paper and a cup of beans.

Materials: Each pair of students needs a ten strip sheet of toilet paper, all connected, and a cup of beans (black-eyed peas also work well since they are smaller and less expensive, small rainbow cubes can also be used.)

Directions:

Students need toilet paper and beans ONLY. Direct the students to write 10% along the bottom edge of each of the ten sections of the toilet paper strip.

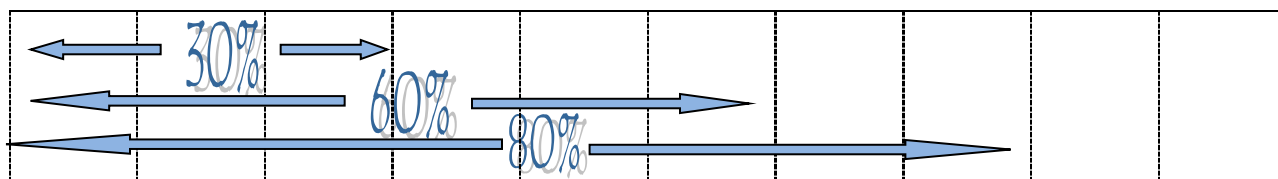
1. Ask students:

- “Why is a sheet of toilet paper with 10 sections given to solve percents when percent is out of 100?”

10 is a factor of 100 and each section represents 10%.

- How do you represent 30%, 60%, and 80%?

The number of sections is 3 sections, 6 sections, and 8 sections.

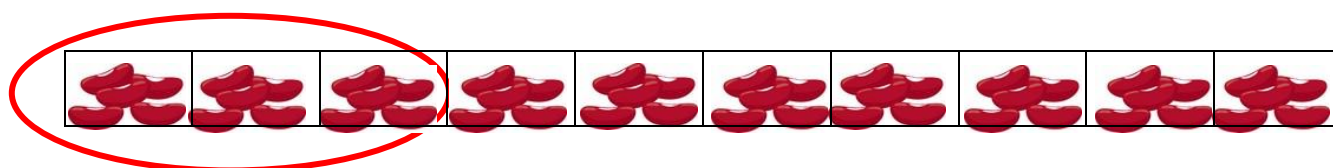


2. Work through all of the examples below with just the toilet paper and the beans:

Example 1: _____ = 30% of 50

Dialogue...

Question	Answer
<i>What is the 50?</i>	The whole amount.
<i>How do we put this on the toilet paper?</i>	Spread the 50 beans on the toilet paper?
<i>Does it matter how many beans are on each section?</i>	Yes
<i>Why?</i>	Each section is representing 10% therefore each section has equal amounts.
<i>How many beans go on each section?</i>	Five, because 50 (total number of beans) divided by 10 (number of sections) equals 5.
<i>Now, how do we get 30%?</i>	Three sections are 30%.
<i>What is 30% of 50?</i>	15, because there are 5 beans on each section and 30% is 3 sections.

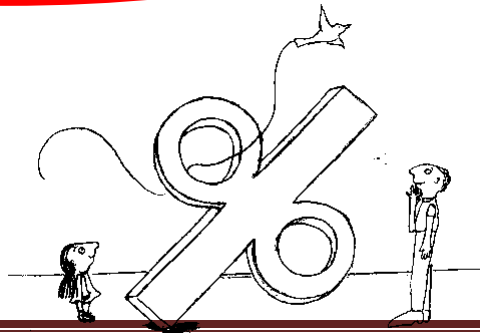
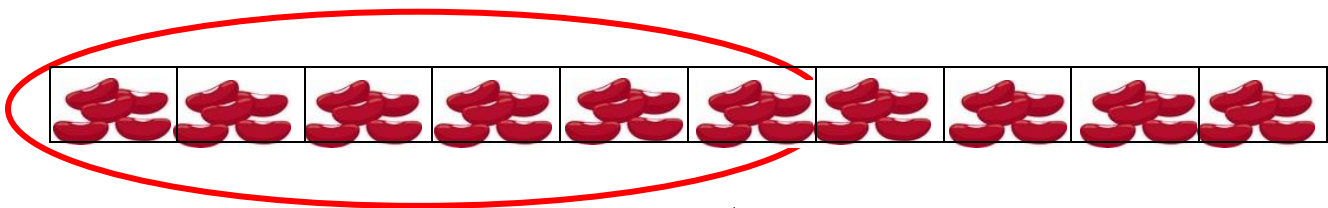


Example 2:

30 is ____% of 50

Dialogue...

Question	Answer
<i>What is the 50?</i>	The whole amount.
<i>How do we put this on the toilet paper?</i>	Spread the 50 beans on the toilet paper?
<i>Does it matter how many beans are on each section?</i>	Yes
<i>Why?</i>	Each section is representing 10% therefore each section has equal amounts.
<i>How many beans go on each section?</i>	Five, because 50 (total number of beans) divided by 10 (number of sections) equals 5.
<i>Is the 30, 30%?</i>	No.
<i>How do you know?</i>	If it were 30% the percent sign would be there.
<i>What's 30 then?</i>	It's how many beans out of 50 we have.
<i>How many sections does it take to get 30 beans?</i>	6
<i>What percent of 50 is 30?</i>	60% because 6 (sections) times 10 (%) for each section)



Example 3: 20 is 40% of ____



Dialogue...

Question	Answer
<i>How many beans go on each section?</i>	We don't know because we are not given the total amount of beans.
<i>What is the 20?</i>	20 is the number of beans in 40%.
<i>So, where do we put the 20 beans?</i>	We put them in 4 sections, since we have 40%.
<i>Does it matter how we put the 20 beans on the 4 sections?</i>	Yes, they must be spread out equally because all the sections are the same (10%).
<i>How many beans go on each section?</i>	5, because 20 (beans) divided by 4 (sections) equals 5
<i>How many beans go on each of the remaining sections?</i>	5, because all the sections are equal, and if there are 5 beans on the first four sections then there must be 5 beans on all sections.
<i>40% of what number is 20?</i>	50 because there are 5 beans per section and 5 times 10 is 50.





Toilet Paper Percent



Additional problems for practice are given below. At some point, students may want to switch to ‘drawing’ their process using the blank ‘Ten Frames’ on the next page.

I. ____ is 30% of 50

II. 30 is ____% of 50

III. 20 is 40% of ____

IV. 18 is 90% of ____

V. 32 is ____% of 40



Toilet Paper Percent Handout

10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Toilet Paper Percents – Handout

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Toilet Paper Percents

Solve these problems using the toilet paper to show the representation of each problem.

1. 20% of $50 = ?$

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2. 40% of $30 = ?$

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3. 60% of $60 = ?$

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4. $?\%$ of $50 = 15$

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5. $?\%$ of $60 = 54$

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6. $?\%$ of $30 = 6$

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7. 20% of $? = 24$

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8. 70% of $? = 21$

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9. 60% of $? = 24$

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10. Make up and solve, using toilet paper, one example of each kind of percent. Put all drawings on the back of this worksheet. You may not use a problem that has already been done for you on your notes or worksheet. Each problem should involve a different percent each time.

Some Benchmark Problems...

1. What is 25% of 20?

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2. What is 50% of 12?

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3. What is 75% of 40?

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4. 25% of what number is 11?

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5. 50% of what number is 16?

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6. 75% of what number is 36?

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7. What % of 60 is 15?

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8. What % of 42 is 21?

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9. What % of 12 is 9?

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Toilet Paper Percents – Handout

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