

UNIT 8 Math SOS (Sheet of Study)

Standards Addressed:

3 OA 5 Apply properties of operations as strategies to multiply and divide.2 Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.) (Students need not use formal terms for these properties.)

3 OA 8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (This standard is limited to problems posed with whole numbers and having whole number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).)

3 OA 9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

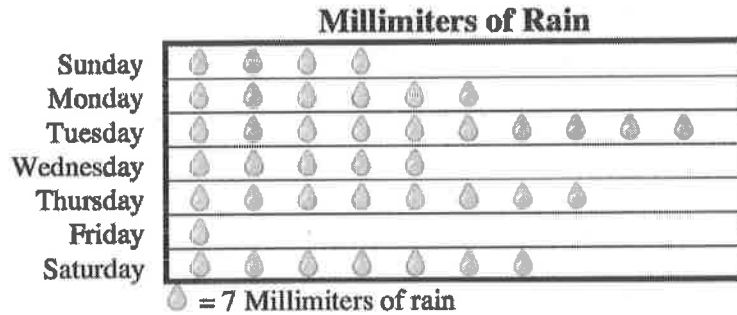
3 NBT A Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

3 MD 3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

Properties of Multiplication and Division

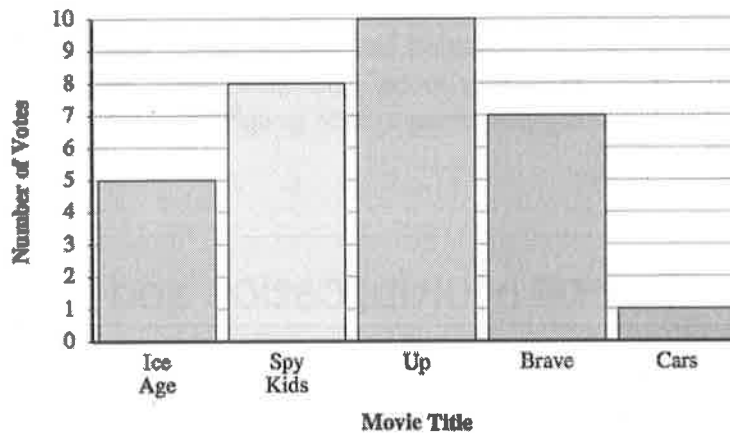
Property	Example
Distributive	$5 \times (1 + 4) = (5 \times 1) + (5 \times 4)$
Commutative	$5 \times 1 = 1 \times 5$
Associative	$(8 \times 3) \times 6 = 8 \times (3 \times 6)$
Identity	$11 / 11 = 1$ $11 \times 1 = 11$
Zero	$9 \times 0 = 0$

Mr. Sanders class was performing an experiment to see which day of the week had the most rain. His class recorded their information in the pictograph below.



- 6) Which day had the most rain? *Tuesday*
- 7) Which day had the least rain? *Friday*
- 8) Did it rain more on Saturday or Tuesday? *Tuesday*
- 9) How much rain was there on Sunday? *28 mm*
- 10) How much rain was there on Monday? *42 mm*

During indoor recess the students got to vote on which movie to watch. The voting results are listed below. Use the bar graph to answer the questions.



- 1) How many people voted for Ice Age? *5*
- 2) Did more people vote for Ice Age or for Up? *Up*
- 3) Did fewer students vote for Cars or for Brave? *Cars*
- 4) Which movie received exactly 10 votes? *Up*
- 5) What is the difference in the number of people who voted for Brave and the number who voted for Spy Kids? *1*
- 6) What is the combined number of people who voted for Up and Brave? *17*
- 7) Which movie received the most votes? *Up*
- 8) Which movie received the fewest votes? *Cars*
- 9) How many more votes did Spy Kids receive than Brave? *1*