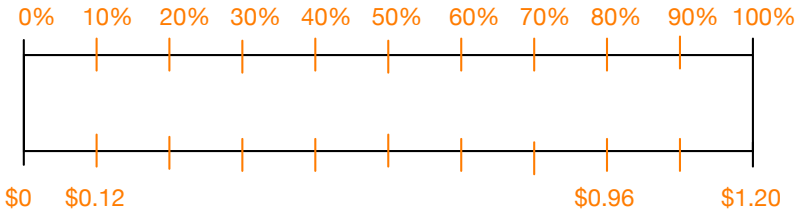
Percent Problems
Extend Your Learning
Answers and Explanations

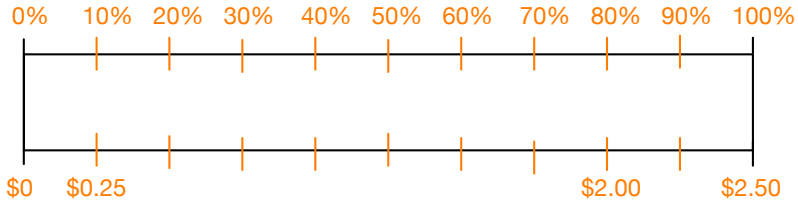
Sketch percent bars to represent each problem. Use your representation to solve the problem.

A sale of school supplies was held in the middle school gym to raise funds for a trip to a wilderness area. The problems below refer to items from the sale.

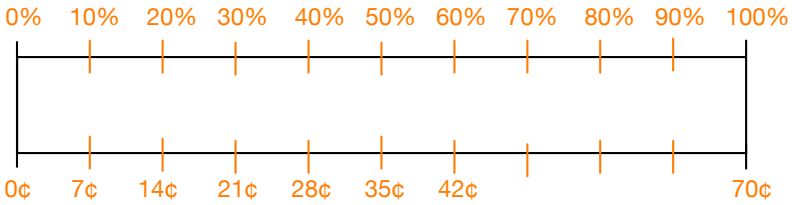
1. Even though the prices were very reasonable, the sixth-grade students decided they needed to reduce the price of each pen by 20%. What should they charge for a pen originally priced at $1.20?
   Since the price of the pens will be reduced by 20%, we can find 20% of the original price and subtract that amount from the original price. That is the same as finding 80% of the original price because 100% - 20% = 80%. $1.20 divided by 10 is $0.12, so 10% of $1.20 is $0.12. Eight times 10% is 80% and 8 times $0.12 is $0.96. The students should charge $0.96 for each pen.



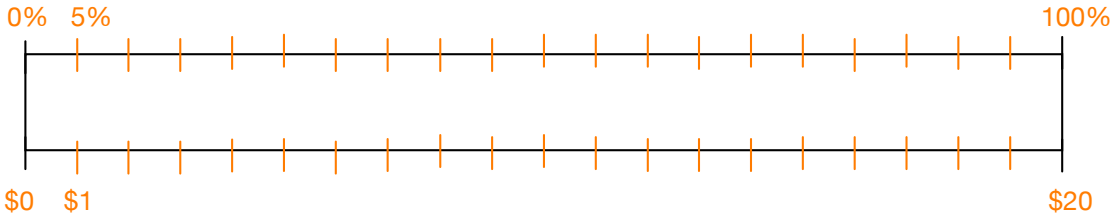
2. The new price of the most expensive pen was $2.00. What was the original price?
   Two dollars is 80% of the original price because the price of the pen was reduced by 20%. Eighty percent divided by 8 is 10% and $2.00 divided by 8 is $0.25, so 10% of the original price is $0.25. Since $0.25 x 10 is $2.50 and 10 x 10% is 100%, the original price was $2.50.



3. Notebooks were reduced from 70¢ to 42¢. What percent reduction was that?
   Fifty percent of the original price would be 35¢. Since 42¢ is greater than 35¢, we know it is more than 50% of the original price. Next we can find 10% of the original price by dividing 70¢ by 10. We get 7, so 10% of 70¢ is 7¢. If we keep adding 7 to mark each additional 10%, we see that 42¢ is 60% of the original price. Since 100% - 60% = 40%, the price was reduced by 40%.



4. A slightly used soccer ball was priced at $1.00. A new soccer ball just like it would cost $20. By what percent was the price of the slightly used soccer ball reduced?
   Because $1.00 is not very much in comparison to $20, we know the price was reduced by a large percent. $20 divided by $1 is 20, so the used soccer ball costs 1/20 of the price of the new soccer ball. We therefore divide the percent bar into 20 equal parts and mark where $1 is. To find what percent that is, we divide 100% by 20 and get 5%. So the used soccer ball costs 5% of the price of the new soccer ball. 100% - 5% = 95%, so the price was reduced by 95%.



5. Autographed pictures of the principal were priced at 20¢. No one bought one, so they reduced the price 100%. How much can the principal expect to collect if he sells all the pictures?
   100% - 100% = 0%. The pictures cost 0% of the original price. This means they were free. The principal won't collect any money!