

## Ratio, Rate, and Percent

### Notes

#### *Simple interest*

$$I = P \cdot r \cdot t$$

$$I =$$

$$P =$$

$$r =$$

$$t =$$

If there is no unit for time and interest rate provided, we assume it's per annum.

Calculate the amount of money you will have after investing \$1000 into a risky financial product that offers 10% growth rate for 3 years, assuming simple interest.

#### *Compound Interests*

$$I = P \cdot (1 + r)^t$$

Calculate the amount of money you will have after investing \$1000 into a risky financial product that offers 10% growth rate for 3 years, assuming compound interests.

### Discussion questions

1. Enzo has fish in two aquariums. In one aquarium, the ratio of the number of guppies to the number of goldfish is 2:3. In the other, this ratio is 3:5. If Enzo has 20 guppies in total, what is the least number of goldfish that he could have?
  
  
  
  
  
  
  
  
  
  
2. Karl had his \$20000 salary reduced by 10% because he has been rude to his co-worker. He decided to improve himself and subsequently earned a promotion which increased his salary by 10%. What is his current salary?
  
  
  
  
  
  
  
  
  
  
3. Harry charges \$4 to babysit for the first hour. For each additional hour, he charges 50% more than he did for the previous hour. How much money in total would Harry earn for 4 hours of babysitting?
  
  
  
  
  
  
  
  
  
  
4. A fraction is equivalent to  $\frac{5}{8}$  and its denominator and numerator add up to 91. What is the difference between the denominator and numerator of this fraction?

5. Naoki wrote nine tests, each out of 100. His average on these nine tests is 68%. If his lowest mark is omitted, what is his highest possible resulting average?

6. Each time Kim pours water from a jug into a glass, exactly 10% of the water remaining in the jug is used. What is the minimum number of times that she must pour water into a glass so that less than half the water remains in the jug?

### Practice questions

1. Lara ate a quarter of a pie and Ryan ate thirty percent of the same pie. The next day Cassie ate  $\frac{2}{3}$  of the what was left. What fraction of the original pie was not eaten?

2. Uncle Joe made chocolate chip cookies. Eric ate fifty percent of them right away. Ryan ate fifty percent of what was left. Ten cookies remain. How many cookies did Uncle Joe make?

3. The ratio of big dogs to small dogs at a pet show is 3:17. There are 80 dogs at this pet show. How many big dogs are there?