



Grade 6 Math Circles

February 9th, 2022

Percentages and Applications Problem Set

1. For the following:

- Represent any percentages as a decimal and as a fraction.
- Represent any decimals as a percentage and as a fraction.
- Represent any fractions as a percentage and as a decimal.

Also, for the fractions, the numerators shouldn't have decimals and you should use 100, 1000, 10 000 or 100 000 for the denominators, similar to the table from the lesson.

(a) 0.777% (b) 50.05% (c) 1.63 (d) 0.908 (e) $\frac{49}{100}$ (f) $\frac{252}{10\,000}$

2. Tanya and her classmates had a math quiz out of 25 marks. Tanya earned 24 marks, Hilda earned 20 marks, and Joshua earned 17 marks. What are their grades as percentages?
3. Leona borrows \$52 000 from a company with an interest rate of 5% for 3 years, and her husband borrows \$10 000 from a different company with an interest rate of 8% for 18 months. What will be the accumulated value that Leona and her husband will have to repay?
4. Vanessa is going to repay the money she's borrowing at an interest rate of 6% for 21 months. If the accumulated value she is going to repay is \$29 282.50, what is the present value of the money?
5. Ravindra and Hongshu made a pizza together. Ravindra ate $\frac{2}{5}$ of the pizza. Hongshu ate half as much as Ravindra. What percentage of the original pizza was left?
6. A bicycle at Store A costs \$450. The regular price of the same bicycle at Store B is 15% more than it is at Store A. The bicycle is on sale at Store B for 10% off of the regular price. What is the sale price of the bicycle at Store B?



7. Each time Jim pours water from a jug into a glass, exactly 10% of the water remaining in the jug is used. If the jug starts out being full of water, what is the minimum number of times that he must pour water into a glass so that less than half the water remains in the jug?
8. A bakery just changed their menu prices to reflect a special sale that they're having. Cookies went from \$2 each to \$1.50 each, muffins went from \$5.75 each to \$3.45 each, and cakes went from \$43 each to \$28.81 each. What percentage of discount was applied to each of these items?
9. A restaurant bill, including 13% tax but not including a tip, is \$135.60. The guests want to give the server a 15% tip based on the bill before tax. How much tip should the guests pay the server?
10. On a science test, Janine got 80% of the 10 multiple choice questions correct and 70% of the 30 short answer questions correct. What percentage of the 40 questions on the test did she answer correctly?
11. In a container at a candy store, there are 200 candies. Of these candies, 90% are red and the rest are blue. After Yehudi eats some of the red candies, 80% of the remaining candies in the container are red. How many red candies did Yehudi eat?