



Try these problems before watching the lesson.

1. The distance from Goteborg to Jonkiping on a map is 88 cm. The scale on the map is 1 cm : 15 km. How far is it between the two city centers, in kilometers?
2. The four partners in a business decide to split the profits of their company in the ratio 2 : 3 : 3 : 5. If the profit one year is \$26,000, what is the largest number of dollars received by any of the four partners?
3. A tank is 26% full of water. After 700 gallons are added, the tank is 40% full. How many gallons does the tank hold?
4. Round tables seating 8 people and rectangular tables seating 12 people are being used at a banquet for 8th graders. The ratio of round tables to rectangular tables is 2 to 1. How many tables are used to seat 336 students at the banquet, if no table has an empty seat?



**First Problem:** A bag initially had blue, red and purple gumballs in the ratio of 2 : 3 : 4. Five red gumballs are added to the bag. The probability of randomly drawing a red gumball is now 40%. How many gumballs are now in the bag?

**Second Problem:** Iniki has large, medium and small metal bars. The large bars each weigh 8kg. The medium bars each weigh 6kg. The small bars each weigh 3kg. Iron, nickel and lead are present in the ratio 4 : 1 : 3 in each large bar, 2 : 1 : 3 in each medium bar and 1 : 1 : 1 in each small bar. If Iniki wants to melt together a combination of bars to make an alloy that contains 40kg of iron, 20kg of nickel and 40kg of lead, how many small bars will she have to use?

 Follow-up Problems

5. There are only red marbles and green marbles in a bag. The ratio of red marbles to green marbles in the bag is  $4 : 7$ . Julia then adds 90 red marbles and 36 green marbles to the bag, which makes the probability of selecting a red marble from the bag on a random draw equal to  $\frac{1}{2}$ . How many total marbles are in the bag after Julia has added the 126 marbles?
6. The ratio of John's allowance to Bill's allowance is  $3 : 7$ . The ratio of John's allowance to Mary's allowance is  $2 : 5$ . What is the ratio of Mary's allowance to Bill's allowance? Express your answer as a common fraction.
7. The difference of the squares of two distinct positive numbers is equal to twice the square of their difference. What is the ratio of the smaller number to the larger? Express your answer as a common fraction.
8. The energy given off by a spherical star, such as our sun, is equal to  $\sigma AT^4$ , where  $\sigma$  is a constant,  $A$  is the surface area of the star, and  $T$  is its temperature. Spherical star JZ114 has ten times the radius and half the temperature of our sun. What is the ratio of the energy JZ114 gives off to the energy our sun gives off? Express your answer as a common fraction.

 Share Your Thoughts

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