

# RATIO APPLICATIONS FAIR FUN

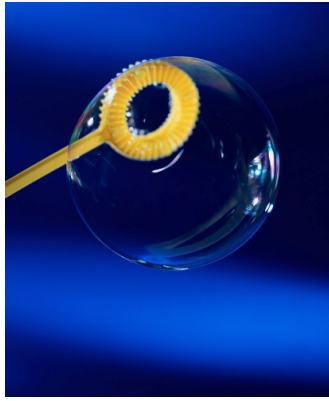


Q1. Everybody loves the fireworks at a fair. They come in big and small sizes. Fireworks are made from powdered metallic salts mixed with explosive chemicals. The table shows the colour of the flame produced by each salt as it burns. To make a mixture of colours, the salts are mixed in different ratios.

Complete the table below to calculate the amount of each salt required for a fireworks event.

FIREWORKS COLOUR	METALLIC SALT
Yellow	Sodium carbonate
Green	Copper sulfate
Red	Strontium chloride
Orange	Calcium chloride
Blue	Copper chloride
Purple	Potassium chloride

	Quantity of finished package	Ratio of the salts used	Expected colour of fireworks	Quantity of each salt needed
(a)	100 kg	4 parts sodium carbonate 6 parts strontium chloride		
(b)	50 kg	2 parts copper chloride 3 parts sodium carbonate		
(c)	20 kg	3 parts copper sulphate 7 parts copper chloride		
(d)	45 kg	4 parts sodium carbonate 5 parts copper chloride		
(e)	30 kg	5 parts potassium chloride 1 part copper chloride		



Q2. Sal's Super Bubble Competition is always a winner at the fair. To make super soap bubbles, you make a mixture of 1 part detergent, 9 parts glycerin and 10 parts water.

Complete the table to calculate the quantity of each ingredient to make the following final quantities.

	Quantity of final mixture	Quantity of each ingredient (mL)
(a)	200 mL	
(b)	500 mL	
(c)	6 L	
(d)	8 L	
(e)	9.5 L	



Q3. Another popular fair attraction is tasty sherbet. It is made of 12 parts icing sugar, 2 parts citric acid and 1 part baking soda.

Complete the table to calculate the quantity of each ingredient to make the following final quantities.

	Quantity of final mixture	Quantity of each ingredient (grams)
(a)	900 grams	
(b)	1200 grams	
(c)	6000 grams	
(d)	30 kg	
(e)	36 kg	

## ANSWERS

- Q1. (a) 40 kg sodium, 60 kg strontium  
(b) 20 kg copper, 30 kg sodium  
(c) 6 kg sulphate, 14 kg chloride  
(d) 20 kg sodium, 25 kg copper  
(e) 25 kg potassium, 5 kg copper

- Q2. (a) 10 mL detergent, 90 mL glycerine, 100 mL water  
(b) 25 mL detergent, 225 mL glycerine, 250 mL water  
(c) 300 mL detergent, 2700 mL glycerine, 3000 mL water  
(d) 400 mL detergent, 3600 mL glycerine, 4000 mL water  
(e) 475 mL detergent, 4275 mL glycerine, 4750 mL water

- Q3. (a) 720 g icing sugar, 120 g citric acid, 60 g baking soda  
(b) 960 g icing sugar, 160 g citric acid, 80 g baking soda  
(c) 4800 g icing sugar, 800 g citric acid, 400 g baking soda  
(d) 24000 g icing sugar, 4000 g citric acid, 2000 g baking soda  
(e) 28800 g icing sugar, 4800 g citric acid, 2400 g baking soda