Part 1.

As a part of the camping trip, Emma is hosting a party by the lake. She has made punch with 4 cups of fruit juice and 8 cups of seltzer water. She has also prepared 15 hotdogs. She just found out though that 3 times as many people are coming camping as she thought! Help her figure out how much more she needs to prepare?

Step	Original Amount	New Amount
0	4 cups juice	12 cups of juice
1	8 cups seltzer	**???**
2	15 hotdogs	**???**

Solution

Step 1

Step	Original Amount	New Amount
0	4 cups juice	12 cups juice
1	8 cups seltzer	**24 cups seltzer**
2	15 hotdogs	**???**

8 cups x 3 = ???
8 cups x 3 = 24 cups

Step 2

Step	Original Amount	New Amount
0	4 cups juice	12 cups juice
1	8 cups seltzer	**24 cups seltzer**
2	15 hotdogs	**45 hotdogs**

15 hotdogs x 3 = ???
15 hotdogs x 3 = 45 hotdogs

Part 2.

Emma knows that she can buy 15 hotdogs for $32.25, but now she needs to buy 45 hotdogs for her party. How much money does she need to buy 45 hotdogs?

Step	Number of Hotdogs	Total Cost
0	15	$32.25
1	45	**???**

Solution

Step	Number of Hotdogs	Total Cost
0	15	$32.25
1	45	**$96.75**

15 : 32.25
45 : ???

Find the unit rate

$$32.25 \div 15 = 2.15$$

$$2.15 \times 45 = 96.75$$

Part 3.

Emma wants to make punch for the camping trip. It takes her 3.6 minutes to make 1.2 cups of punch. She thinks she might be able to get away with about 3 and half cups. BUT she may need as many as 8! Given that she has limited time, figure out how long it will take the minimum she might need and the maximum?

Step	Amount of punch	Time
0	1.2 cups	3.6 minutes
1	3.6 cups	**???**
2	8 cups	**???**

Solution

Step 1

Step	Amount of punch	Time
0	1.2 pitchers	3.6 minutes
1	3.6 pitchers	**10.8 minutes**
2	8 pitchers	**???**

$$1.2 : 3.6$$

$$1.2 \times ?? = 3.6$$
$$1.2 \times 3 = 3.6$$
$$3.6 \times 3 = 10.8 \text{ minutes}$$

Step 2

Step	Amount of punch	Time
0	1.2 pitcher	3.6 minutes
1	3.6 pitchers	**10.8 minutes**
2	8 pitchers	**24 minutes**

$$1.2 : 3.6$$

$$1.2 \times ?? = 3.6$$
$$1.2 \times 3 = 3.6$$
$$8 \times 3 = 24 \text{ minutes}$$

Part 4.

Emma is powered by a special type of electric battery. She wants to find a way to tell how long her batteries last so that she has a better idea of how many she needs for camping. Help her figure out how much battery power she will use depending on how long she is out.

Step	Battery Usage	Time
0	$\frac{1}{20}$ of battery's power	$\frac{2}{3}$ of an hour
1	**???**	1 hours
2	**???**	3 hours

Solution
Step 1

Step	Battery Usage	Time
0	$\frac{1}{20}$ of battery's power	$\frac{2}{3}$ of an hour
1	**$\frac{3}{40}$ of battery's power**	1 hour
2	**???**	3 hours

$$\frac{1}{20} battery : \frac{2}{3} hour$$

$$?? \; battery : 1 \; hour$$

$$\frac{2}{3} hour \times ?? = 1 \; hour$$

$$\frac{2}{3} \times \frac{3}{2} = 1$$

$$\frac{1}{20} \times \frac{3}{2} = \frac{3}{40}$$

In 1 hour, $\frac{3}{40}$ of battery's power is used

Step 2

Step	Battery Usage	Time
0	$\frac{1}{20}$ of battery's power	$\frac{2}{3}$ of an hour
1	**$\frac{3}{40}$ of battery's power**	1 hour
2	**$\frac{9}{40}$ of battery's power**	3 hours

$$\frac{3}{40}\ battery : 1\ hour$$

$$?? : 3\ hour$$

$$1 \times ?? = 3$$

$$1 \times 3 = 3$$

$$\frac{3}{40} \times 3 = \frac{9}{40}$$

In 3 hours, $\frac{9}{40}$ of the battery's power is used

Part 5.

Everyone is very excited about going camping. Emma wants to plan how long they should do everything. After dinner they are planning on telling stories around the campfire, making s'mores, and drinking hot chocolate for about 75 minutes. She is trying to figure out if they spend time doing all three, what the best breakdown is. Right now she is thinking they will spend half of the 75 minutes (37.5) telling telling stories. Of the remainder, she is thinking she wants to spend one third the time drinking hot chocolate and one fifth of the time making s'mores. The remainder will be for getting ready for bed. Help her figure out how long these times actually are.

Step	Activity	Portion of Time	Activity Time
0	Telling Stories	$\frac{1}{2}$	37.5
1	Drinking chocolate	$\frac{1}{3}$ after telling stories	**???**
2	Making s'mores	$\frac{1}{5}$ after telling stories	**???**

Solution

Step 1

Step	Activity	Portion of Time	Activity Time
0	Telling Stories	$\frac{1}{2}$	37.5
1	Drinking chocolate	$\frac{1}{3}$	**12.5**
2	Making s'mores	$\frac{1}{5}$	**???**

$$75 - 37.5 = 37.5$$

$$\frac{1}{3} \times 37.5 = ??$$

$$\frac{1}{3} \times 37\frac{1}{2} = ?? \qquad [37 \times 2 + 1 = 75]$$

$$\frac{1}{3} \times \frac{75}{2} = \frac{75}{6} = 12.5 \qquad [75 \div 6 = 72 \textit{ remainder } 3]$$

Step 2

Step	Activity	Portion of Time	Activity Time
0	Telling Stories	$\frac{1}{2}$	37.5
1	Drinking chocolate	$\frac{1}{3}$	**12.5**
2	Making s'mores	$\frac{1}{5}$	**7.5**

$$75 - 37.5 = 37.5$$

$$\frac{1}{5} \times 37.5 = ??$$

$$\frac{1}{5} \times 37\frac{1}{2} = ??$$

$$\frac{1}{5} \times \frac{75}{2} = \frac{15}{2} = 7.5 \textit{ minutes}$$

Part 6

Everyone is chipping in to pay for the food for the camping trip. Because Emma might have to buy new batteries, her friends agreed she should pay a quarter as much as everyone else. In addition, more people keep deciding to come, which changes the total cost and the breakdown per person. Emma is in charge of telling everyone how much they owe. Based on the total and the changing number of people who are coming, help her figure out how much each person should pay, including Emma.

Step	Total Cost	Number of People (not including Emma)	Total per everyone else
0	$125	31	$4.00
1	$145	35	**???**

Solution

Step 1

Step	Total Cost	Number of People (not including Emma)	Total per everyone else
0	$125	31	$4.00
1	$145	35	**$4.11**

$$Price\ for\ everyone \times number\ of\ people\ (not\ including\ Emma) + Price\ for\ everyone \times \tfrac{1}{4} = \$145$$

$$P \times 35 + P \times 0.25 = 145$$

$$35P + 0.25P = 145$$

$$35.25P = 145$$

$$P = 145 \div 35.25$$

$$P = \$4.11$$