

Problem of the Month: "Party Time"

Anna Yates School

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Yates_POM Gr4

00:06 Devon, what'd you think? Four girls had short blonde hair?

00:10 Yeah, because...well, I put down four people, because, 8 had long hair, and 4 had short hair.

00:21 And it said that "How many people had short red hair?" So the short blonde hair ones are the ones. All they have to do is dye their hair red.

00:34 Do you think anyone's going to dye their hair red, though? Is that what the problem's asking us, Gabby? Are they going to be dyeing their hair? No.

00:41 I want you guys to keep talking as I walk away. And as I walk away, I want you to think about, how did you get that "four girls?"

00:48 Because you guys all agreed that four girls had short, or, red hair. Right?

00:53 Is there some kind of diagram you can draw to show that? Or is there some kind of visual representation you can use to show that? Is there?

01:05 I guess.

01:06 You guess? You want to try that?

01:07 Ok.

01:08 That's the spirit. All right. Keep going. I'll be back.

01:10 So, what is, what is the problem asking us? What does it want us to find out?

01:14 How many people have red hair?

01:16 How many people have red hair. Okay, so boys or girls, have red hair. Do any of the boys have red hair?

01:21 No

01:22 No. So, we know that we're looking for girls here. Okay.

01:27 So, how many boys and girls are at the party?

01:31 16 girls.

01:32 16 boys, 16 girls.

01:33 How do you know that 16 boys and girls are at the party?

01:37 Because two divided by 32 is 16.

01:39 2 divided by 32, or 32 divided by 2?

01:42 32 divided by 2.

01:43 So there's 16 boys and there's 16 girls. Okay. So, let's go to the next part of the problem. Let's go back to the first part.

01:51 "At Lesley's party, one fourth of the people have long hair." So, what's...how many people are at the party?

01:58 32.

01:59 32. So what would be one fourth of 32?

02:03 8?

02:04 8, yeah.

02:06 8? Agreed? So, then how many people had long hair?

02:10 8.

02:11 8. Do any of the boys have long hair?

02:13 No.

02:14 So, it's only the girls that have long hair.

02:16 Mm hmm.

02:17 Did you all note that on your paper somewhere, that if you have 16 girls, we know that 8 of them have long hair?

02:26 um, no. ... I had 8 short hair and 8 long hair.

02:32 Okay. So if 8 of them have long hair, how many girls does that leave?

02:38 8 more girls.

02:39 We still have 8 more girls, okay? Let's go to the next part of the problem.

02:44 One half of the people at the party were boys.

02:47 And one fourth of the girls had short blonde hair. One fourth of the girls.

02:44 Well, how many girls are at the party?

02:57 16.

02:58 So if one fourth of the girls had short blonde hair, how many girls actually had short blonde hair.

03:04 8.

03:05 4.

03:06 So one fourth—you're saying one fourth of 16 is 4, Naima?

03:12 You're saying one fourth of 16 is 4? So how many people had short blonde hair, then?

03:18 four.

03:19 So we had four people with short blonde hair, and we had 8 girls with long hair, how many girls is that so far?

03:30 What's the four girls with the short hair and the 8 girls with the long hair? How many do we have?

03:35 12.

03:36 We have 12. But how many girls came to the party?

03:39 16.

03:40 So, how many girls do we have unaccounted for right now?

03:45 How many girls we don't know about their hair?

03:48 3.

03:49 4?

03:50 Why don't you guys talk about that. And really take a look at the girls, because we know there's 16 girls.

03:56 And we've split them up in a couple of different ways. So you may want to go back and talk about right now

04:01 How many girls have what kind of hair. Okay? I'm going to put a clue up on the board in about 2 minutes. So be checking for that, okay?

04:08 Nice job. Keep going. I like the way you guys are proving to one another. I like that everyone's voice is being heard now.

04:16 One fourth of people that have long hair, and we have one fourth of boys, that's 8, then we still have this 4, and those 4 are the ones with red hair.

04:30 So all together we have 4 groups, so that's how I got my answer with 4.

04:36 Because we have red hair group, boys, girls, and long hair. So.

04:41 With blonde hair.

04:42 Yeah. Blonde hair. Also, the girls have blonde hair.

04:46 I mean, blonde hair, girls, boys, and red hair.

04:50 Yeah. So....

04:56 Naima, do you get it now?

05:01 Yeah.

05:02 How we got our answers? Did you change your mind?

05:14 So we should write down how we got our answer so we can remember when we come back.

05:19 16?

05:21 Quick question. How did you know that there were 16 boys and 16 girls at the party. Juan?

05:27 Because ... 16 plus 16 is 32.

05:32 Okay.

05:33 And I put 16 girls and 16 boys.

05:36 16 girls and 16 boys. Okay. Okay! So ... getting back to our problem.

05:45 One fourth of the people at the party had long hair.

05:48 One fourth of... um.

05:49 So how many people had long hair?

05:52 One fourth of 32 is 8, so.

05:56 Why did you decide one fourth of 32, rather than one fourth of 16?

06:02 Because, um... 8 girls had long hair.

06:08 Say that again?

06:09 Because, 8 girls had long hair.

06:15 And how do we know that 8 girls had long hair? Soliya?

06:18 Because one fourth of...

06:19 Because one fourth of what?

06:22 Of 32.

06:23 Of 32. Okay. If I have 16 boys and 16 girls, you're saying that if these are my ladies right here,

06:30 You're saying that this would be the amount that represents what?

06:35 Girls with long hair.

06:37 Girls with long hair, because this is one fourth of 32. Right?

06:40 Mm hmm.

06:42 So how did you get these two?

06:44 Because, because um, it said, because it says, because to get, because it said half of the kids at the party were boys, so that makes this 16.

06:59 But how would you split these and make 16 to add them, to add 16 plus 16 equals 32.

07:06 Okay. So if these are my girls with long hair, then that means we've got 8 with long hair, 8 with some other kind of hair, right?

07:14 Short. Short, red, and blonde.

07:17 Short, red, or blonde hair. So what my real question is, how did you know that four girls had blonde hair, leaving only four girls with red hair?

07:26 Because the last ...

07:28 Hold on a sec, I'm going to let, because he's really excited to talk.

07:30 Because one fourth, one fourth supposed to be blonde, and one fourth supposed to be red.

07:38 One fourth of what? 16 or 32?

07:41 16?

07:43 Why 16, Soliya?

07:44 Because we already have 16 ...

07:47 So that means 16, we have 16 girls? Half of them have this, and the other fourth have this.

07:56 It looks like you've already drawn pictures of that. So what I want you to think about as I walk away is, how do you know you're correct?

08:05 How could you prove it? Talk about it, real quick.

08:11 16 boys, 16 girls. Agreed, Carolina? How do you know that?

08:16 Because, 16 were boys.

08:19 So since it said that one half were boys, and one half were girls, we have 16 boys, 16 girls. Jaden, agree? Agree. Now what.

08:28 So. One fourth of the girls had blonde, short blonde hair. That's one fourth of the girls.

08:33 One fourth of the girls. So how many girls were there?

08:35 16.

08:36 16 girls.

08:37 That should have 8. 4,5,6,7,8.

08:40 Okay.

08:41 8. And then, the other 16 boys. And these are the four girls that are left.

08:49 Okay. So what is that represent?

08:53 The girls with short red hair.

08:57 So how do we know, Shamari, how do we know that four of them could possibly have short red hair? How do we know that?

09:04 Because...four times 9 equals 32?

09:11 So here's what I want you to do. I'm going to walk away. And I want you guys to agree. To talk with each other about that.

Possible cut into two clips? It switches to the math coach.

09:18 So you guys have some really interesting ideas here.

09:22 Really good thinking going on. So write two fours, what you told me. Sure, yes! Maybe we can help her keep track of her thinking.

09:33 And then... girls. 16 people.

09:36 Okay. Now,

09:40 So, one fourth long hair. One fourth blonde hair. 8 left.

09:49 That's half of 32! One half of 32!

09:52 8 left. Would be, um...

09:54 Right.

09:57 So. Now what we have to do is figure out, one fourth of the people have long hair. Do any of the boys have long hair?

10:08 No.

10:09 None of the boys have long hair.

10:11 So what does that tell us? All the girls ...

10:14 Have to have long hair.

10:17 Do what you're thinking! Play with the math!

10:22 So how are we going to figure that out?

10:25 Divide?

10:26 Okay, what are you going to divide?

10:33 16 divided by 2 would be 8.

10:37 4 into 8.

10:39 We said four people.

10:40 It's just 8 divided by 2.

10:41 We don't have boys. None of the boys have long hair.

10:47 You're ... no, your thinking is good. What does the 16 stand for?

10:54 I divided two fourths divided by 32. So 16.

10:59 So 16 girls. Why don't you label that? Put 16 girls.

11:03 16 girls have short blonde...

11:05 So put a "G" for girls right here, can you sit down? So this is going to help you keep track of your thinking.

11:14 6, 12...

11:15 So we know where we got the 16 girls.

11:16 Boys, too!

11:17 Now, you divided by 2. Okay? And why did you divide by 2?

11:32 You were thinking of the two fourths. Because first we were looking at two fourths of 32, and now we're looking at two fourths of...

11:43 16. Right?

11:47 Maybe I could divide by 2 until I can't divide by 2 anymore.

11:53 Then I can multiply by 2 to get my answer.

11:58 Okay.

12:00 So maybe,

12:02 So what does this 8 stand for?

12:07 Because I thought...

12:09 You took the two fourths of 16, how many girls, what?

12:12 How many girls have short blonde hair.

12:14 Write it down.

12:16 Oh, wait. How many girls have...

12:18 Long hair!

12:26 Because none of the boys had long hair. So write down your thinking. Okay?

12:36 So what do we know for sure, based on your math? How many have long hair?

12:41 8. 8 girls.

12:44 8 girls have long hair. Out of how many?

12:46 Out of... 32.

12:48 Out of how many girls.

12:49 Oh. 16.

12:50 So we know that two fourths, or half of them, half of the girls had long hair.

12:56 So maybe 8 of the other girls had short red hair!

12:59 How many are left? How many girls are left? If 8 of them have long hair, how many girls do we have left?

13:05 8.

13:06 So we have 8 left. We know for sure that 9 have long hair. Now, how can we figure out how many of them had blonde hair, short blonde hair?

13:25 Hm.

13:28 Maybe we have to divide. With one fifth. Because it says .. no. One fourth of the girls have short blonde hair.

13:37 Can you put another 8 down here?

13:40 I'm sorry. 8 circles.

13:42 Oh, okay. 1,2,3,4,5,6,7,8.

13:48 Okay. So with one of these, so half of the 16 of them had the long hair. So can you mark off which ones of them had the long hair?

14:00 Your brain's on fire, and you've got good mathematical thinking.

14:04 Thank you.

14:05 One of the things that mathematicians have to do is we have to keep track of our thinking so we don't get lost.

14:11 So writing it down, what we're thinking, like you've got your drawing, is really helpful.

14:20 Okay!

14:21 There's too much...

14:22 How many have white, um, blonde hair..

14:25 Short blonde hair.

14:26 Short blonde hair.

14:30 1,2,3,4,5,6,7,8.

14:30 And how many have... well, we have blonde hair and red hair.

14:35 No. Um, short blonde, red hair.

14:39 So...

14:41 8 of them had short red hair.

14:43 If 8 of them had short red hair, how many are going to have long blonde hair.

14:47 8.

14:49 So you're going to have to figure out how many of the girls that are left have blonde hair, and how many of the girls that are left have red hair.

14:57 No! When it says blonde, it means red-blonde hair.

15:03 So how many of the girls are left have short blonde hair, why don't you underline short blonde hair, and how many have...

Another potential clip splice, back to whole class.

15:11 I'm seeing people snap as they're looking at this, and I've had a few people looking at this. When you see this, what are you thinking about when you see this?

15:20 What are you thinking about? Bemnet, what are you thinking about when you see this?

15:24 Division.

15:26 You're thinking division? In what kind of way?

15:29 Because, if she has 16 boys that have short hair, and 8 girls that has long hair, then if you do $16 + 8 = 24$, then 24 subtract from ...

15:54 32 subtract 24, and you now know how much are left over.

16:00 You might get how many have short hair.

16:02 What are you thinking about, when you see the chart?

16:05 There's a big one, like rectangle, that's the 16, and then two small squares. One says 8, and those two small squares are like, 16?

16:17 And 16 divided by two equals 8.

16:21 So you're saying that this square plus this square would be equal to...16?

16:27 No. Um. Those two squares represent like the division? And if you do 16 divided by those two squares, it'll equal to 8.

16:41 Thank you very much.

16:44 Ladies and gentlemen, I'm going to give you a couple more minutes to work with your partners. By the time we get to 11:15, we're going to stop and do a little bit of writing about this.

16:54 Whether you're done or not. And that's completely okay, if you're still thinking about the problem.

16:58 But I want you to spend the next couple of minutes thinking about where you are in the problem, and what this diagram might have to do with the problem. Okay?

17:09 You have a couple more minutes. Continue, please. Thank you.