**Main Problem #6**

Topic: *Whole Numbers as Fractions*

Problem: After a fun day at the Hubble Bubble Gum Factory, you call your friends and tell them about the amazing day you had and the “tons” of bubblegum you bought after the tour. Your friends Peter and Mary Jane were so jealous of how much fun you had that they ask their parents to take them to a bubblegum factory. Because you forgot to tell them the name of the factory you visited, Peter and Mary Jane went to took separate factories. Peter went to Wally Dally’s and Mary Jane went to Chewy Bubble Shop.

At Wally Dally’s, each pack of gum consists of 8 pieces of bubblegum. At Chewy Bubble Shop, each pack brings 6 pieces of bubblegum.

Q1. How many packs of bubblegum would Peter and Mary Jane have to buy if want 24 pieces of bubblegum? 48? 72?

Q2. At each factory, how many pieces of bubblegum are there in 7 packs? 8 packs? 9 packs?

Q3. How many more packs of bubblegum than Peter would Mary Jane have to buy if she wants to eat at least 80 pieces of bubblegum?

A1. At Wally Dally’s, each pack brings 8 bubblegum pieces, while at Chewy Bubble Shop, each packs comes with 6 pieces of bubblegum. Knowing this, we can write our answers as fractions and simplify them to obtain *y* number of packs for *x* number of pieces.

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| --- | --- | --- | --- |
| NAME/PIECES | 24 | 48 | 72 |
| Wally Dally’s | $$\frac{24 pieces}{8 pieces/pack}=3 packs$$ | $$\frac{48 pieces}{8 pieces/pack}=6 packs$$ | $$\frac{72 pieces}{8 pieces/pack}=9 packs$$ |
| Chewy Bubble Shop | $$\frac{24 pieces}{6 pieces/pack}=4 packs$$ | $$\frac{48 pieces}{6 pieces/pack}=8 packs$$ | $$\frac{72 pieces}{6 pieces/pack}=12 packs$$ |

A2. Since we were given the number of packs, we can multiply that number by the number of bubblegum pieces within each pack.

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| --- | --- | --- | --- |
| NAME/PACKS | 7 | 8 | 9 |
| Wally Dally’s | $$7 packs ⋅8 \frac{pieces}{pack}=56 pieces$$ | $$8 packs ⋅8 \frac{pieces}{pack}=64 pieces$$ | $$9 packs ⋅8 \frac{pieces}{pack}=72 pieces$$ |
| Chewy Bubble Shop | $$7 packs ⋅6 \frac{pieces}{pack}=42 pieces$$ | $$8 packs ⋅6 \frac{pieces}{pack}=48 pieces$$ | $$9 packs ⋅6 \frac{pieces}{pack}=54 pieces$$ |

A3. To find the answer, we must first figure out how many packs of bubble gum Peter would have to buy if he wants at least 80 pieces of bubble gum. Solving this problem like we did in Q1 results in$\frac{80 pieces}{8 pieces/pack}=10 packs$. To figure out the number of packs for Mary Jane’s case, we follow the same procedure, except this time, we have an issue. Because 80 over 6 is not perfectly divisible - the answer results in a remainder - we have to figure out which number around 80 is divisible by 6. Luckily, we figured out that for 72 pieces of bubble gum, there are 12 packs. Using this information, we can continue adding 6 the number of bubblegum pieces and 1 to the number of packs until we reach a number above 80 that is divisible.

Since $\frac{78 pieces}{6 pieces/pack}=13 packs$, we must add 6 once more to the total number of pieces and 1 more to the total number of packs. If Jane wants to eat at least 80 pieces of bubblegum, she would have to buy $\frac{84 pieces}{6 pieces/pack}=14 packs.$Therefore, Mary Jane would have to buy 4 more packs of bubblegum than Peter.