

Some word problems are tedious and require some guess and check. Today, **Problem Pear** will guide us through two of such word problems. To show his determination in persevering through the word problems, he is wearing his lucky red hachimaki (a Japanese headband that symbolizes effort and determination). So, 'press on' and work out the sums with him! Good luck!

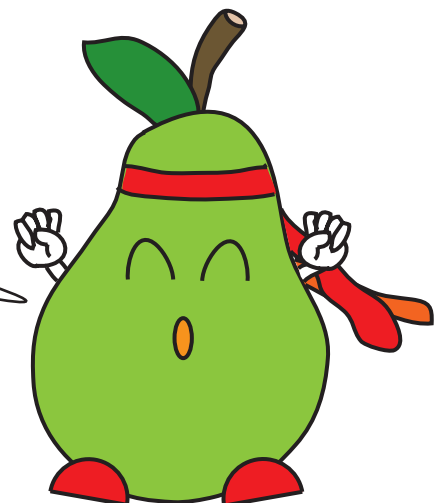


Question 1

Peter's mother gave him a piggy-bank as a birthday present. On his birthday, he put some coins in the piggy-bank, and from then onwards, he did that everyday. If he put in 11 or 19 coins each day, he would have exactly 150 coins on 11th November after putting in the coins for that day. When was his birthday?

Question 2

There were 31 students in Class 6A. The teacher gave out exactly 470 sweets to them. Each boy received an equal number of sweets, and each girl received 7 more sweets than each boy. How many girls were there in 6A?



SOLUTIONS!!!

Question 1

Solution:

His total number of coins(150), must be the sum of a multiple of 11 and a multiple of 19. Let's list some multiples of 19, and see whether the difference between 150 and each of these multiples of 19 will give a multiple of 11.

Multiples of 19	Difference with 150	Difference is a multiple of 11?	Multiples of 19	Difference with 150	Difference is a multiple of 11?
0	150	No	76	74	No
19	131	No	95	55	Yes
38	112	No	114	36	No
57	93	No	133	17	No

Hence, $(95 \div 19) + (55 \div 11) = 10$ days have passed. Hence, his birthday is on $11 - 10 + 1 = 2^{\text{nd}}$ November.

Question 2

Solution:

If each girl received the same number of sweets as each boy, the total number of sweets should be a multiple of 31. However each girl received 7 more sweets than each boy. Hence, we would expect the total, 470, to be the sum of a multiple of 31 and a multiple of 7. Let's list some multiples of 31, and see whether the difference between 470 and each of these multiples of 31 will give a multiple of 7.

Multiples of 31	Difference with 470	Difference is a multiple of 7?	Multiples of 31	Difference with 470	Difference is a multiple of 7?
0	470	No	248	222	No
31	439	No	279	191	No
62	408	No	310	160	No
93	377	No	341	129	No
124	346	No	372	98	Yes
155	315	Yes	403	67	No
186	284	No	434	36	No
217	253	No	465	5	No

There are two possible multiples of 7 above (in yellow). However, $315 \div 7 = 45$ is impossible as we cannot have 45 girls when there were only 31 students! The number of girls is hence $98 \div 7 = 14$ girls.