Meeting 3 Student’s Booklet

What numbers can we make?

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Contents

1  Even or odd?
2  New currency
3  A present for Dad
4  A present for Mom
5  Challenges
6  Crystal Ball
Each group has a deck of cards.

Remove the jokers.

The dealer gives each player a card.

The purpose of the game is to figure out whether the sum of the numbers on the cards is even or odd.

The first person who knows the answer taps the table, and wins.

Find a strategy to win the game.
Congratulations! You are the new Secretary of State in the US. Now you can make your own currency and name it after yourself.

Pick a card from the deck, and assign that value to your currency.

Your job is to find out how many bills of your currency can be used to purchase the items listed on the next page. The store gives no change back.

Example: Your name is Alex and you pick a king of clovers from the deck. You create a new currency:

\[
1 \text{ “Alex”} = $13
\]

You want to purchase an ipad mini, whose cost is $300.

How many “Alex” coins can you use?

Because the store gives no change back, you do not want to pay more than $300.

Given that
- 23 “Alex” = 23 x $13 = $299
  while
- 24 “Alex” = 24 x $13 = $312 > $300

you can use 23 “Alex”.

\[
300$ = 23 \times 13$ + 1$ \text{ “the rest”}
\]
Pick up a card from the deck. Describe your currency:

NAME: _____________  VALUE:_________________

STUFFED ANIMAL: $14 = _____x + _____

SOCcer Ball: $25 = _____x + _____

RUNning Shoe $68 = _____x + _____

LaRge PIZza $19 = _____x + _____

Your coin `the rest'
3 A present for dad

Four brothers put all their savings together, to buy a present for dad.

They only have 4 kinds of coins (1$, 3$, 5$, 7$):

All together, they have A LOT of coins of each kind (100 or more).

*They go to a store that offers no change.*

Which of the following presents can they buy using exactly 4 coins?

(They do not have to use every type of coin, and they can use the same type of coin more than once.)

Recall that the store gives no change, so the total value of the 4 coins must be equal to the price they want to pay.

Explain your thoughts.
4 A present for mom

Four daughters put all their savings together, to buy a present for mom.

They only have 4 kinds of coins (1$, 4$, 7$, 10$):

- 1$
- 4$
- 7$
- 10$

All together, they have A LOT of coins of each kind (100 or more).

They go to a store that offers no change.

They want to use exactly 3 coins.

(They do not have to use every type of coin, and they can use the same type of coin more than once.)

Fill out the price tags of objects they can buy without receiving any change.
Get together as a group. In the table on the right, circle all the prices you were able to get.

What is the biggest number you got? ____________

Is that the biggest one could possibly get using 3 coins? Why?
_________________________________________________

What is the smallest number one could ever get?
_________________________________________________

Could one get any number in between the smallest and the biggest?
_________________________________________________

_________________________________________________

Do you notice any pattern?
_________________________________________________

_________________________________________________
Recall the situation: the four sisters put all their savings together to buy a present for mom.

They only have 4 kinds of coins (1$, 4$, 7$, 10$), but they have a lot of coins of each kind (100 or more).

Trading with Jack

Jack, their brother, has two kinds of coins: $1 and $3.

He wants to trade his coins with his sisters, giving away as few coins as possible. (For example - he will trade a 7$ coin for two $3’s and a 1$. Every other combination, for example $7$=(3 + 1 + 1 + 1 + 1)$ would involve more coins.

Determine all the other exchange rates, and draw them here.

Can you now explain why the three sisters could only buy items whose price was a multiple of 3?
5  Challenges

If the four sisters can use 4 coins, what kind of prices can they pay?

What if they use 5 coins?

6 coins? or ...

Make a challenge for your table leader:

________________________________________
________________________________________
________________________________________

1$ = 1$

4$ = 3$ + 1$

7$ = 3$ + 3$ + 1$

10$ = 3$ + 3$ + 3$ + 1$
Max and Mara thought of a number between 1 and 50.

a. Mara’s number is a multiple of 2, 5 and 6. What could it be?

b. Mara’s number is 1 more than a multiple of 4. Max’s number is 1 more than a multiple of 7. Could they be thinking of the same number?

c. Mara’s number is 3 more than a multiple of 5. Max’s number is 8 more than a multiple of 10. Could they be thinking of the same number?

d. When you divide Mara’s number by 5, you get a remainder of 4. When you divide it by 4, you get a remainder of 3. When you divide it by 3, you get a remainder of 1. What is Mara’s number?