Coins

Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

		Answer
1.	Surya has **two identical coins** that worth 10 cents. What type of coins does Surya have? 	*A nickel or a 5-cent coin*
2.	Tarek has **two different coins**, and they add up to 11 cents. What are the coins? ◯ + ◯ = **11¢**	*A dime and a penny* *Or 10¢ + 1¢ = 11¢*
3.	a. Susan has **three different coins**, and they add up to 31 cents. What are her coins? ◯ + ◯ + ◯ = **31¢** b. Conrad also **has three different coins**, but they add up to 36 cents. What are his coins? ◯ + ◯ + ◯ = **36¢**	*a. A quarter, a nickel, and a penny* *25¢ + 5¢ + 1¢ = 31¢* *b. A quarter, a dime, and a penny.* *25¢ + 10¢ + 1¢ = 36¢*
4.	Dominic has three different coins too, but they add up to 61 cents. What are his coins? ◯ + ◯ + ◯ = **61¢**	*A half dollar, a dime, and a penny:* *50¢ + 10¢ + 1¢ = 61¢*
5.	Miriya has six coins and they are either dimes or nickels. The number of nickels is twice the number of dimes. What is the value of Miriya's six coins? Miriya has 2 dimes and 4 nickels, 20¢ + 4 × 5¢ = 40 cents	*40¢ or 40 cents*
6.	Jeremy bought a bubblegum that cost 55¢ and paid for it with exactly 4 coins. What are the four coins?	*A quarter and 3 dimes or 25¢ + 10¢ + 10¢ + 10¢ = 55¢*
7.	Christina has six coins. She has quarters, dimes, and pennies. She has more quarters than pennies. She has more dimes than quarters. How much money does she have altogether? 6 coins: the smallest number of coins is 1 penny, 3 dimes, and 2 quarters: 25¢ + 25¢ + 10¢ + 10¢ + 10¢ + 1¢ = 81¢	*81¢ or 81 cents*
8.	Edna exchanged three one-dollar bills for nickels and dimes. She received the same number of nickels as dimes. How many coins did she receive? $3.00 = 300 cents 1 dime and 1 nickel = 15 cents 300 ÷ 15 = 20 groups of a dime and a nickel Since the number of nickels is the same as the number of dimes, she must have received 300 ÷ 15 = 20 nickels and 20 dimes or 40 coins. Check: 20 nickels + 20 dimes = 100 + 200 = 300 cents or $3.00.	*40 [coins]*

9.	Jack has 6 more nickels than Maya has. After he gives 10 nickels to Maya, how much more money will Maya have than Jack? Let's use an imaginary third person. If Jack gives 10 nickels to a third person, he then would have 4 fewer nickels than she would. In other words, Maya would then have 4 more nickels than Jack. But since Maya receives those 10 nickels, Maya actually has 14 nickels more than Jack does. 14 nickels = 70 cents Another way: We can draw a model showing Jack has 6 more nickels than Maya (BEFORE). **14 nickels = 14** × 5¢ = 70¢ **BEFORE** Jack 10; Maya 4; 6 **AFTER** Jack; Maya 4 10 Another way: to act it out. If Jack will be giving 10 nickels to Maya he should have at least 10 nickels. Let us say, he has 10 nickels and Maya 6 less, or just 4 nickels. Now Jack gives 10 nickels to Maya, he will end with 0 nickels, Maya will have 14 nickels. Which is 14 nickels more than him. 14 nickels × 5 cents = 70 cents	*70¢ or 70 cents*
10.	Pariza spent 3 quarters on two pieces of candy. One of the candies cost 35¢ more than the other. How much each piece of candy costs? Candy A 35¢; Candy B; 25¢ + 25¢ + 25¢ = 75¢ Candy B = (75¢ - 35¢) ÷ 2 = 20¢ Candy A = Candy B + 35¢ = 20¢ + 35¢ = 55¢	*20¢ and 55¢*
11.	A group of students contributed $1.21 toward purchasing special ribbon for a class project. Each student paid his or her share with the same two coins. How many total pennies were contributed? 121 cents are divisible by 11 or by 121. In one class there could be only 11 students, 121 is too big crowd for the class and there are no coins with the value of half-penny. If each student contributed 11 cents, then there were eleven students in all. And since each student contributed the same two coins (a dime and a penny), then eleven pennies were contributed in all.	*11 [pennies]*
12.	Kuzey has $5.24 in his coin bank. After he sorted all the coins by type, he noticed that he has only four types of coins and each type has the same number of coins. Which four type of coins does he have and how many of each coin? *Guess and Check.* Four each of $1, 25¢, 5¢, 1¢ *Another way* $5.24 ends on 4 cents, you can get 4 cents in the sum, only if there were 4 cents in the group, because other coins end on 0 or 5. Thus, there were 4 groups of the same 4 coins. 524÷4 = 131. To get 131 cents with 4 coins, he will need to have a dollar coin, quarter, nickel, penny. So, he has 4 coins of each type ($1, 25¢, 5¢, and 1¢)	*Four coins of $1, 25¢, 5¢, and 1¢*
13.	A total of thirteen pennies is put into three piles so that each pile has a different number of pennies. Dion found several ways to do this. What is the fewest possible number of pennies in the largest pile of any of the possible combinations? First of all, there are eight possible combinations showing the different values of each pile. If we list these piles in an organize manner, we get: 1, 2, 10 1, 3, 9 1, 4, 8 1, 5, 7 2, 3, 8 2, 4, 7 2, 5, 6 3, 4, 6 From the list, we found that 6 is the smallest number in the biggest pile of any of the combination. Another way: 13 is not divisible by 3, you'll have a remainder of 1. Put this 1 penny aside and split equally the rest of the coins. You will have 4, 4, 4 pennies. Now every group must have different number of coins. Put the one penny (which was in reserve in the middle pile), to make the last pile the biggest, you need to move 2 pennies from the first pile to the last one. So, you'll get 2, 5, 6. 6 is the answer as we made the smallest possible biggest pile using this technique.	*6 [pennies]*

14.	Kathleen bought candy canes that were on sale: 4 for 50 cents. She then sold them at school at 3 for 50 cents. How many candy canes did Kathleen sell if she made a profit of $5.00? To avoid fraction, let's assume that she bought and sold 12 candy canes. The 12 candy canes cost 3×50¢ or $1.50 The 12 candy canes sold for 4×50¢ or $2.00 Profit in this case: $2.00 - $1.50 = $0.50 Since Kathleen made a profit of $5.00 which is 10 times the scenario above, she must have sold 12×10 or 120 candy canes.	*120 [candy canes]*
15.	Lorenzo had $6.00 that were exchanged for nickels and dimes. The number of nickels was the same as the number of dimes. How many nickels were there in the change? One nickel and one dime have a total value of 15¢. $6 = 600¢; 600¢ ÷ 15¢ = 40. Therefore, there were 40 nickels (and 40 dimes). Another way: A set of 10 dimes and 10 nickels is worth $1.50. Four such sets are worth $6.00. So, there are 40 nickels and 40 dimes in the $6.00	*40 nickels*
16.	Angela had a nickel, a dime, a quarter, a half-dollar, and a silver dollar. After she lost one of the coins, she had exactly seven times as much money as her little sister had. Which coin did Angela lose? We can test each scenario and check for divisibility by 7. The total value of all her coins is $1.90. If she lost a nickel, she would have $1.85. If she lost a dime, she would have $1.80. If she lost a quarter, she would have $1.65. If she lost a half-dollar, she would have $1.40. If she lost a dollar, she would have $0.90. Only $1.40 is divisible by 7, therefore, she lost the half-dollar coin. Another way: Angela had in total 5c + 10c+25c+50c+100c = 190 cents. She did not have pennies, she lost 1 coin and the number is divisible by 7. The only number that works is 140, so she must have lost a half-dollar coin.	*Half-dollar [coin]*
17.	Raina, Sylvia, Tim, and Veronika each have $1.85 in quarters and dimes. No two have the same number of coins. Together, how many quarters do they have? We can find the largest number of quarters one person can have. Since it is $1.85, no one has more than 7 quarters. Because $1.85 ends in a 5 and the value of dimes ends in a 0, each person must have an odd number of quarters. Because each person has a different number of coins, so each person must have a different number of quarters (one has 1 quarter, one has 3 quarters, one has 5 quarters, and one has 7 quarters). Together, they have 1+3+5+7 = 16 quarters.	*16 [quarters]*
18.	Inside Kevin's pocket, there were 4 pennies, 2 nickels, 1 dime, and 1 quarter. Different values can be made by taking out **one or more coins** from his pocket. How many different values can be made? Notice that Kevin has 49 cents altogether. If you experiment with the given set of coins, any amount from 1 cent to 49 cents can be made. Therefore, there are 49 different amounts that can be made.	*49*

Solution is available on Jan 22, 2021 at www.mathinaction.org