Non-Routine Questions 2

NOTES

Heuristics: Working Backwards

The strategy of working backwards only applies to a specific type of mathematical word problems. Such mathematical word problems state the end result. Therefore, in order to solve these mathematical word problems, the students have to work backwards through the sequence of events beginning with the end result given.

The strategy of working backwards allows students to use their logical reasoning and sequencing to find the answers to the mathematical word problems.

Below are some examples of mathematical word problems that can be solved using this strategy.

1. Calvin spent 10 minutes eating his lunch immediately after reaching home. He spent another 10 minutes bathing. After that, Calvin spent 2 hours 15 minutes doing his homework. He completed his homework at 3.55 pm. At what time did he have his lunch?

2. Betty has a piece of ribbon. She cuts the ribbon into 4 equal pieces. Each piece is then cut into 3 smaller equal pieces. The length of each small piece is 35 cm. How long is the piece of ribbon?

3. Mrs Field had some money. She bought three chickens for $15 and 3 kg of potatoes at $1.55 per kilogram. After buying some fruit for $9, she had $37 left. How much money did she have at first?

4. Rick, Henry and Daniel were given some chocolate bars. Rick took $\frac{1}{2}$ the total number of chocolate bars. Henry took $\frac{1}{4}$ of the remaining chocolate bars and Daniel took 33 chocolate bars. There were 12 chocolate bars left. How many chocolate bars were given to the three boys?

Do these questions on another piece of paper.

1. Millie bought a badminton racket that cost $29.90. She gave the shopkeeper the exact amount with 5 pieces of dollar notes and 3 coins. What were the dollar notes and coins she had given to the shopkeeper?

2. A garden is situated in the centre of Jamie's house and her school. The distance between the garden and her school is 1 km. What is the distance from Jamie's house to her school?

3. Replace the following letters with digits 1, 2, 3 and 4. The addition of AB and CD is 46. The addition of DC and BA is 64. Find the digits that represent letters A, B, C and D.

4. Plant A is 1 m tall. Plant B is 50 cm taller than Plant A. Plant C is 5 cm shorter than Plant A. What is the total height of the tallest and the shortest plants?

5. Mr Robinson took a flight from Singapore to Tokyo, Japan. The flight was 7 hours. The time in Tokyo is an hour faster than the time in Singapore. If Mr Robinson reached Tokyo at 7 am on 14 September, find the time of his flight in Singapore.

6. Grace dropped a string into a measuring cylinder of oil and water. $\frac{1}{4}$ of the string was immersed in oil and water. $\frac{1}{8}$ of the string was immersed in water. If 5 cm of the string was immersed in water, what was the total length of the string?

7. Ken has 3 pieces of dollar notes. The first piece of dollar note is twice the amount of money of the second one. The third piece of dollar note is ten times the amount of money of the second one. The difference between the largest and the smallest amounts is $45. How much money does Ken have?

8. The time in New York is 12 hours slower than the time in Singapore. What will be the time in New York when the clock strikes twelve midnight on Christmas Day in Singapore?

9. Simon's father ate $\frac{1}{2}$ of a pizza. Simon ate $\frac{1}{2}$ of what his father had eaten. Simon's mother ate $\frac{1}{2}$ of what Simon had eaten. The remaining 2 pieces of pizza were eaten by Simon's brother. How many pieces of pizza were there at first?

10. Mrs Davis bought a fish at a market. She gave the stall-owner $50. She received the change in 4 pieces of dollar notes in two different denominations. One of the dollar notes was 5 times the amount of money of the other dollar note. The change was between $20 and $25. How much was the fish?

11. A bean plant grows 1 cm every three days. How long will the bean plant grow after 30 days?

12. Study the numbers carefully. Find the missing number.

118	159	277
269	?	623
387	513	900