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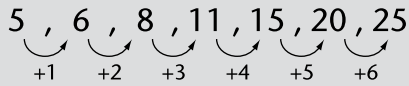
Patterns and Simple Equations

Sarah writes some patterns and asks Sunita to describe the rules and give the next 3 terms in each pattern. Help Sunita with her task.



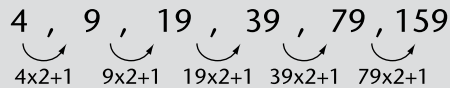
Examples

① Continue the pattern 5, 6, 8, 11, ...



Rule : The numbers increase by 1 more each time.

② Continue the pattern 4, 9, 19, 39, ...



Rule : Double the previous term and add 1.

① 100, 98, 94, 88, _____, _____, _____, ...

Rule : _____

② 1, 2, 6, 24, _____, _____, _____, ...

Rule : _____

③ 50, 48, 51, 49, _____, _____, _____, ...

Rule : _____

④ 5, 9, 17, 33, _____, _____, _____, ...

Rule : _____

⑤ 1, 4, 9, 16, _____, _____, _____, ...

Rule : _____

For each set of numbers, write the rule that relates the first two columns to the third. Then follow the rule to write another set of numbers in the boxes.

⑥

5	9	13
8	4	11
7	10	16

⑦

18	3	7
20	4	6
15	5	4

⑧

4	3	10
5	6	17
7	4	15

The data in each table follow a pattern. Complete the tables and answer the questions.

⑨ Population of Markville

a.

Year	1980	1985	1990	1995		
Population in thousands	69	77	89	105		

b. In which year will the population be 177 000? _____

⑩ Cost of a movie ticket

a.

Year	1995	1996	1997	1998		
Amount (\$)	6.00	6.50	7.50	8.00		

b. How much was a movie ticket in 2001? _____

⑪ Mass of a new born baby

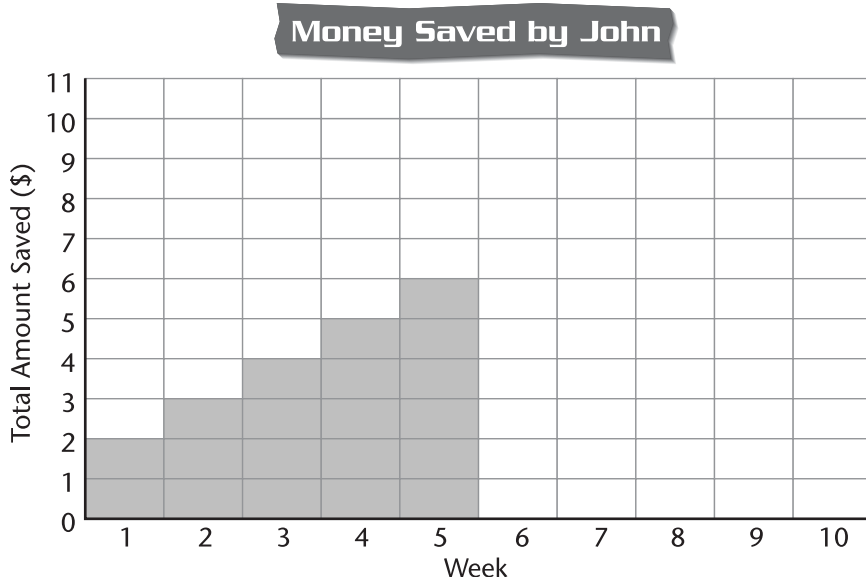
a.

Age (month)	0	1	2	3			
Mass (kg)	3.2	3.4	3.7	4.1			

b. When will the baby weigh 7.6 kg? _____

John saves money according to a pattern. Complete the graph to show the pattern and answer the questions.

⑫ a.



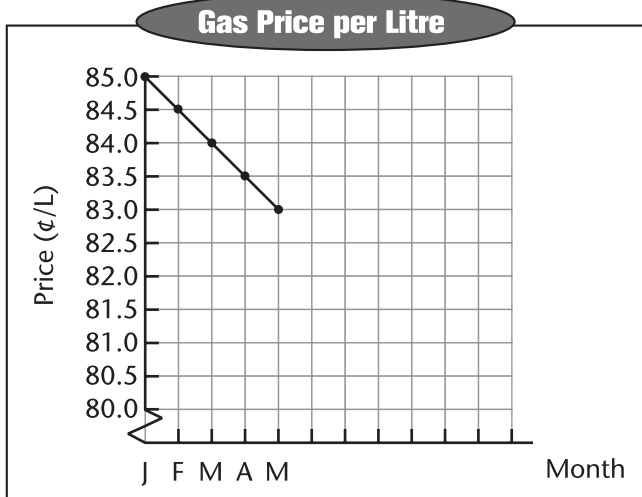
b. How much will he save by Week 12? _____

c. After how many weeks will there be \$20 in savings? _____

d. Describe John's saving pattern. _____

The movement of gas price follows a pattern. Follow the pattern to complete the graph and answer the questions.

13 a.

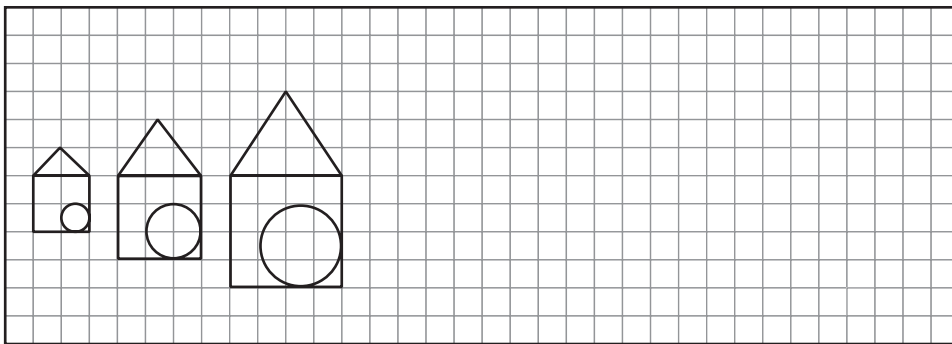


b. What will the gas price be in June?

c. When will the gas price reach 80¢?

Draw the next 2 diagrams in each pattern. Describe the changing rules for each figure.

14 a.

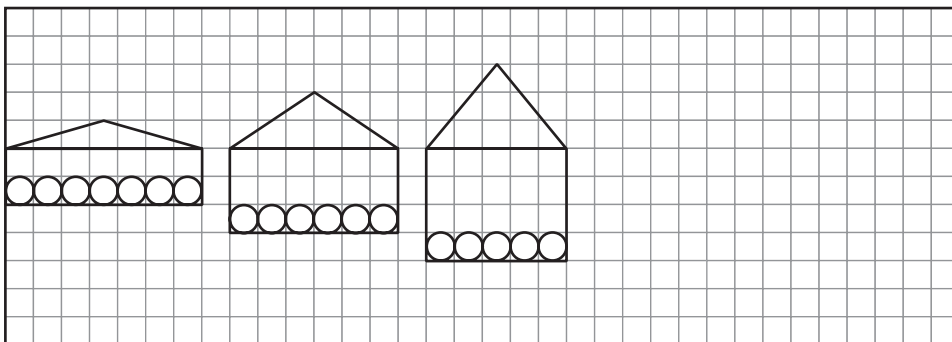


b. Triangle : _____

c. Square : _____

d. Circle : _____

15 a.



b. Triangle : _____

c. Rectangle : _____

d. Circle : _____

Read the number puzzles and find the numbers using the guess-and-test method.

16 Increase this number by 7 and then double it. The result is 70.
This number is .

17 The number is halved and then reduced by 20. The result is 30.
This number is .

18 Divide this number by 2 and then reduce it by 3. The result is 11.
This number is .

19 Add 25 to this number. Then multiply it by 3. The result is 120.
This number is .

20 This number is 7 more than half of 30.
This number is .

21 Half of this number is 7 more than 37.
This number is .

Determine the value of the missing number in each of the following equations.

22 - 17 = 98

23 + 23 = 170

24 39 x = 156

25 x 13 = 117

26 85 ÷ = 17

27 ÷ 12 = 8

28 2 x = 31 - 1

29 5 x = 8 + 92

30 59 - 5 = x 9

31 30 - 9 = x 3

32 520 ÷ = 13 + 7

33 13 + = 220 ÷ 11



Quick Tip

Do the part without missing terms first. Then 'guess and test' the missing numbers.



MIND BOGGLER

Stan uses toothpicks to make the following pattern. Complete the table and the statement.



No. of squares	1	2	3	4	5	6	7	8
No. of toothpicks used	4	7	10					

To make 10 squares, Stan needs toothpicks.