Branching algorithm. Grouping and skip counting.

1 **In your notebook,** solve the equations and write you solutions similarly to the example. Copy your answers here. Make drawings if needed.

$$768 - y = 42 \qquad x - 767 = 18 \qquad z - 126 = 95$$

$$y = \qquad\qquad x = \qquad\qquad z =$$

2 Remove parentheses and calculate using the most convenient way.

43 + (19 + 7) =	890 – (390 + 40) =
156 + (94 – 56) =	107 + (56 – 17) =
247 – (47 + 50) =	432 – (150 – 18) =

3 A. Write down the following expressions:

The sum of **m** and **n** _____ The difference between **34** and **x**_____

The difference between **200** and **48**_____ The sum of **3** and **18**_____

B. Remember why records **a < 12 + 7** and **7 + 4 = 11** are not expressions. Below cross out all the records (not expressions).

8 – 2 100 > 15 45 – 7 + 3 a + 3 = 5

4 + 5 = 3 c + n 6 + 3 = 9 62 < 6000

4 Write expressions corresponding to the word problems:

There are **p** coins in the first chest and **r** coins in the second. How many coins are in both chests? _____

There are **q** coins in the first chest and **x** coins in the second. How many more coins are in the second chest than in the first? _____

There are **n** coins in the first chest. In the second chest, there are **k** coins more than in the first. How many coins are in the both chests? _____

Branching algorithm

Do you remember Bob? He is a robot. Bob can memorize and follow commands given by people. A set of steps or instructions to do something is called an algorithm.
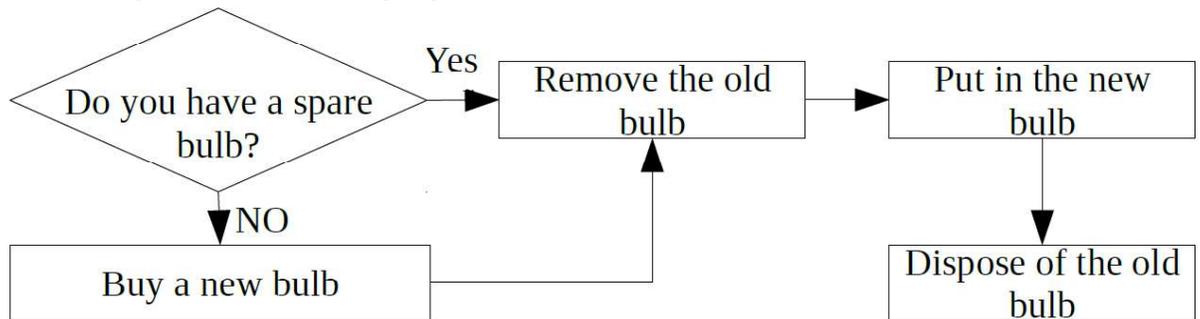
Please help Bob to cross the street with the traffic light. What steps we will need to add to this algorithm?

1._____

2._____

3._____

4._____
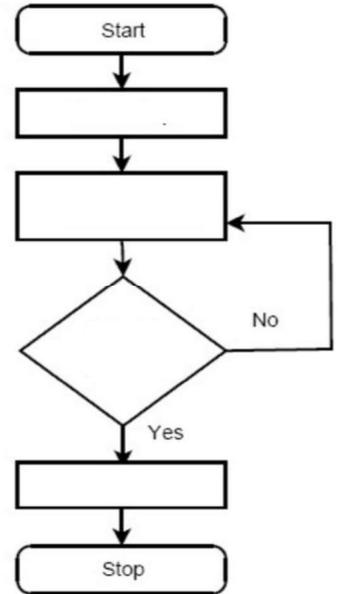
When an "algorithm" makes a choice to do one of two (or more) things, this is called branching. The most common programming "statement" used to branch is the "IF" statement. If light is green, then cross the road.

5 Explain the algorithm of changing the broken bulb.

Do you have a spare bulb? — Yes → Remove the old bulb → Put in the new bulb

Do you have a spare bulb? — NO → Buy a new bulb → Remove the old bulb

Put in the new bulb → Dispose of the old bulb

6 Perform the actions according to the algorithms in the drawing below. Which of these algorithms is linear and which is branching

Algorithm 1:
a → + 9 → - 7 → + 38 → x

a	5	14	20
x			

Algorithm 2:
a → + 7 → < 18 ?
YES → - 4 → x
NO → + 7 → x
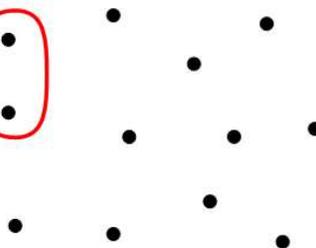
a	5	14	20
x			

2
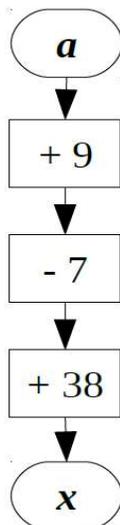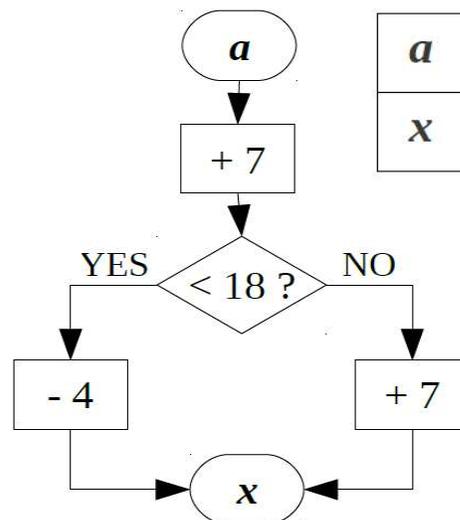
Grouping and Division

7 Foxy Tail is treating kangaroos with ice cream. He gives each kangaroo 2 cones. How many kangaroos can he treat with 12 cones?

Divide the 12 "cones" on the drawing into groups of 2:

How many groups of 2 did you find? ___

When we grouped the points **into** groups of 2 we **divided** them. To express division we write **12 ÷ 2** = ____

8 Little Joe wants to visit several of his friends and he wants to bring a candy for each friend. Each candy costs 3 mouse coins. He has 15 coins. Divide the 15 points into groups of 3 to see how many friends Little Joe can visit while bringing a candy to each of them.
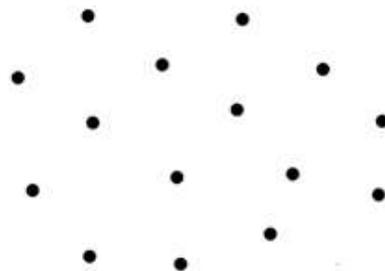
$15 ÷ 3 =$ ____

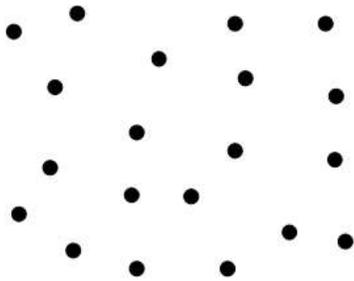**9** Divide 12 points on each drawing according to the instructions and write down the results of the division:

___ ÷ ___ = ___   ___ ÷ ___ = ___

___ ÷ ___ = ___   ___ ÷ ___ = ___

3

10 Use the drawings to help yourself to solve a problem.
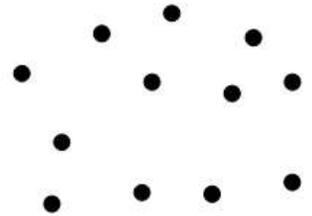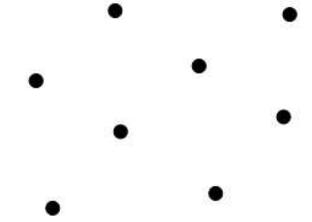
A. Jake the Mouse wants to buy books with his 8 coins. Each book costs 2 coins. How many books can he buy?

$8 \div 2 =$ _____

B. A zoo keeper needs 4 cabbages a day to feed his elephant. He has 20 cabbages in a warehouse. How many days can he do without shopping for more cabbage?
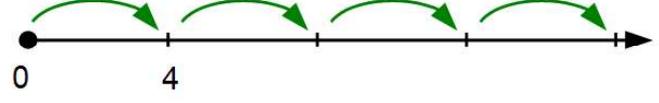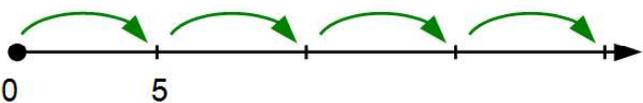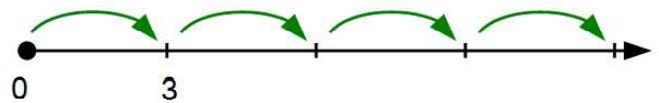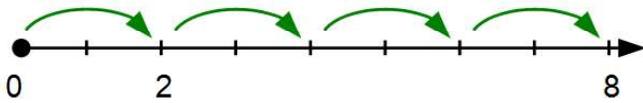
_____

C. How many taxis are needed to take 12 people to an airport if each taxi can take 4 passengers?

_____

Skip counting

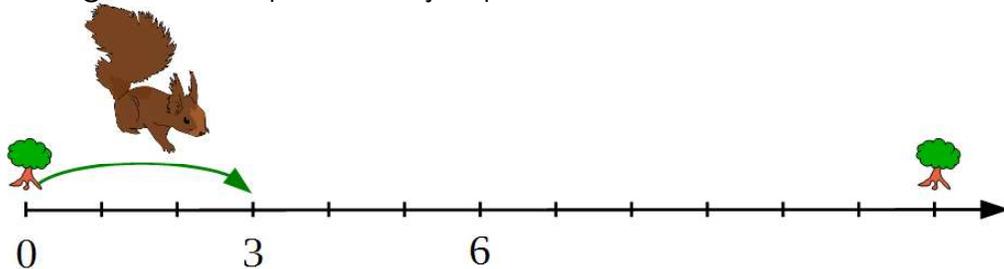0   2   8   0   3

0   5   0   4

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11 On the ground, a squirrel can jump 3 foot at once.

0   3   6

How far can it jump in 3 jumps? _____

How far is one tree from another? ____

How many jumps does the squirrel need to get from one tree to another? ____

12 There are three different cubes. In each row, the same cube is rotated. There are three different patterns on the faces of each cube and each cube had three blank faces. Three faces are shown in each drawing below. Draw the missing patterns.