1 Exploding Dots: 1 <− 2 Rule

1. 9 dots. Answer:

2. ..... dots. Answer:

3. Try to do this one without a grid: ..... dots. Answer:

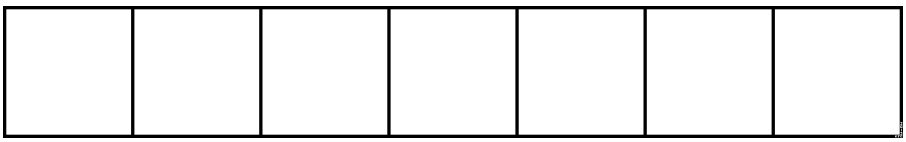
4. What would the mystery code be for ..... dots?

5. What number has the mystery code .....?

6. Do ..... and ..... mean the same thing? ..... and .....? Why or why not?

7. How many boxes would you need for ..... dots?

8. Fill in this grid with the values of each box.



2 $1 <- 10$ Rule

1. Write down a prediction to what the mystery code will be when we use 34 dots. Now try it below.

2. What is the $1 <- 10$ rule?

3 More Practice!

1. Which base is 1020 written in? Do you know for sure? If not, what are all the possible bases it could be written in? Why?

2. Convert 10011 base 2 to base 10.

3. Convert 56 base 10 to base 2.

4. Now that you know how to convert between base 10 and base 2, try converting 45 base 10 to base 3. (You can always ask an instructor for help if you get stuck!)

5. Bonus: What is the value of x if 161 base 10 equals 2201 base x?