

15. Dilation in the Real World: Enlarging on a Copy Machine

First & Last Name: _____ Class: _____



Arnold's sister has painted a beautiful logo for him. But Arnold needs to make the logo three times its original size so it will fit the space allotted on his advertising poster. His office has a copier, but the biggest enlargement it will do is 200%.

Arnold asks his friends: "How can I use this copier to make a 300% enlargement?"

Everyone likes to give advice and Arnold's friends are not exceptions.

Trudy says:

"I would do it in three steps. First make a 100% enlargement. Then take that image and make another 100% enlargement. Finally, one more 100% enlargement of that image will make a logo three times as large."

Lizette says:

"You only need two steps. First make a 150% enlargement. Then take that enlargement and make a 150% enlargement of it. The result will be a three times enlargement."

Jackson says:

"First make a 200% enlargement of the original. Then put that image on the machine and make a 150% enlargement. The result will be a 3 times enlargement."

Kayla says:

"First do a 200% enlargement. Then take the image and enlarge it another 200%. Finally take that image and shrink it 75%. Result: Triple the size of the original!"

Madelyn says:

"Well, the square root of 3 is about 1.73, so I'd set the copier at 173%. Then I'd make the first enlargement, and then, keeping the same setting, make an enlargement of the enlargement. That will give a 300% enlargement."

Which of these suggestions will actually make a 300% enlargement of the original logo? For those that don't make a 300% enlargement, what enlargement do they actually make? Summarize your responses in the table on the reverse side.

| Friend | Result (%) | Explain Your Reasoning |
|----------------|-------------------|-------------------------------|
| Trudy | | |
| Lizette | | |
| Jackson | | |
| Kayla | | |
| Madelyn | | |