

5.NF.5 Multiplication as Scaling

I can think of multiplication as the scaling or resizing of a number.

SCALING

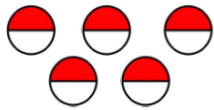
to increase or decrease proportionately in size

$$5 \times 2$$



product is more than 5

$$5 \times \frac{1}{2}$$



product is less than 5

Kim Colton, 2018

When you multiply a fraction by a whole number...

you are taking a fraction of the whole.

$$4 \times \frac{1}{2} = 2$$



1/2 of 4 pizzas is 2 pizzas!



Therefore, the answer will be **less than** the whole number.

$$4 \times \frac{1}{2} = 2$$

Would Steve rather have

$$5 \times \frac{1}{3}$$

or

5

I'd rather have 5 diamonds.

diamonds?



What does the fox say?

X by a **proper fraction** = decrease

X by an **improper fraction** = increase



Your Turn!

TELL WHETHER THE NUMBER WILL INCREASE OR DECREASE. WHAT DOES THE FOX SAY?

$$2 \times \frac{5}{4} \rightarrow \underline{\hspace{2cm}}$$

$$5 \times \frac{1}{4} \rightarrow \underline{\hspace{2cm}}$$

$$3 \times \frac{5}{3} \rightarrow \underline{\hspace{2cm}}$$

$$4 \times \frac{1}{3} \rightarrow \underline{\hspace{2cm}}$$

$$2 \times \frac{1}{5} \rightarrow \underline{\hspace{2cm}}$$

$$3 \times \frac{7}{2} \rightarrow \underline{\hspace{2cm}}$$