

10 x and y satisfy $|2 - x| \leq 6$ and $|y + 2| \leq 4$.

What is the greatest possible value of $|xy|$?

- A 16
- B 24
- C 32
- D 40
- E 48
- F There is no greatest possible value.

There is a valuable result written and illustrated in **Figure 1**. It is that the inequality $|x| \leq a$, for any positive real number a , is another way of saying that x can only take values between $-a$ and a

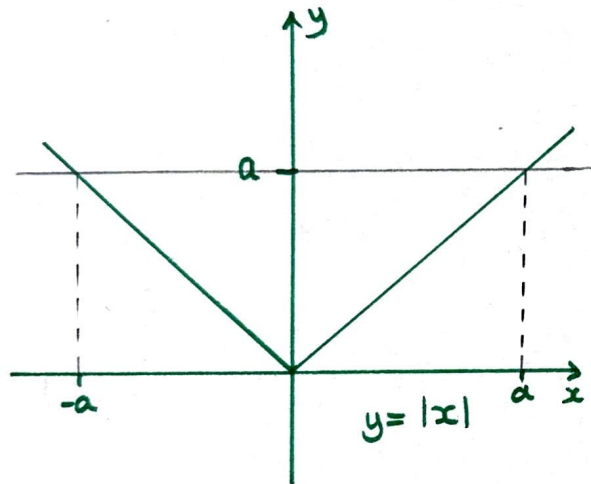
Using this result, I have

$$|2 - x| \leq 6$$

$$\Leftrightarrow -6 \leq 2 - x \leq 6$$

$$\Leftrightarrow -8 \leq -x \leq 4$$

$$\Leftrightarrow -4 \leq x \leq 8$$



$$|x| \leq a \Leftrightarrow -a \leq x \leq a$$

Figure 1

and $|y + 2| \leq 4$

$$\Leftrightarrow -4 \leq y + 2 \leq 4$$

$$\Leftrightarrow -6 \leq y \leq 2$$

so for the greatest possible value of $|xy|$

I will choose $x = 8$ and $y = -6$, giving

$$|8 \times -6| = |-48| = 48 \text{ and the answer is option E}$$