

Solutions

4. Find each product.

a) 7×6

c) -4×4

a) 42

c) -16

b) $5 \times (-10)$

d) -7×8

b) -50

d) -56

5. Multiply.

a) 8×9

c) -5×3

a) 72

c) -15

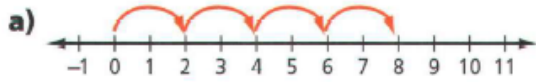
b) $2 \times (-9)$

d) $11 \times (-3)$

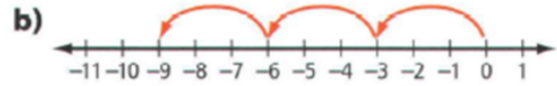
b) -18

d) -33

6. What integer multiplication does each number line model? Find the result.



$$\begin{aligned} 2 \times 4 \\ = 8 \end{aligned}$$



$$\begin{aligned} (-3) \times 3 \\ = -9 \end{aligned}$$

7. Multiply.

a) $-3 \times (-5)$

b) $-8 \times (-4)$

c) $-9 \times (-6)$

d) $-12 \times (-7)$

a) 15

b) 32

c) 54

d) 84

8. Find each product.

a) $-7 \times (-2)$

b) $-12 \times (-12)$

c) $-6 \times (-11)$

d) $-11 \times (-11)$

a) 14

b) 144

c) 66

d) 121

9. Write each situation as an integer expression using multiplication. State the result and its meaning.

- a) A scuba diver dove down 5 m, then took a rest. She did this 6 times. At what depth was the scuba diver after the 6 dives?

$$(-5) \times 6 \\ = -30 \text{ m}$$

- b) Susan withdrew \$20 from the bank machine on three different days. Her mom deposited the money back into her account. How much did Susan's mother deposit?

$$(-20) \times 3 \\ = -\$60 \\ \Rightarrow \$60 \text{ deposited}$$

10. Predict the sign of each product. Justify your answer. Do not evaluate.

a) $-21 \times (-18)$ +

b) $72 \times (-657)$ -

c) $-2 \times (-3) \times (-1)$ -

d) $4 \times (-9) \times (-8) \times 5$ +

e) $-2 \times (-2) \times (-2) \times (-2) \times (-2) \times (-2)$ +

f) $-5 \times 7 \times (-5) \times 7 \times (-5) \times 7 \times (-5) \times 7$ +

+ = positive
- = negative

11. Evaluate each product in question 10.

a) $-21 \times (-18)$

b) $72 \times (-657)$

c) $-2 \times (-3) \times (-1)$

a) 378

b) 47304

c) -6

d) $4 \times (-9) \times (-8) \times 5$

e) $-2 \times (-2) \times (-2) \times (-2) \times (-2) \times (-2)$

f) $-5 \times 7 \times (-5) \times 7 \times (-5) \times 7 \times (-5) \times 7$

d) 1440

e) 64

f) 1500625

12. Evaluate each product.

a) $5 \times (-5) \times (-5)$

b) $10 \times 10 \times (-10)$

c) $-2 \times (-2) \times (-2) \times (-2) \times (-2)$

d) $-3 \times (-5) \times (-4)$

e) $7 \times (-3) \times 10$

f) $-3 \times (-2) \times (-1) \times 11$

a) 125

b) -1000

c) -32

d) -60

e) -210

f) -66

13. From your results in questions 10 and 12, state a set of rules that helps you predict the sign of any multiplication statement.

If odd # of negatives
 \Rightarrow negative
If even # of negatives
 \Rightarrow positive

14. Use multiplication to evaluate.

What strategy did you use?

a) $-7 + (-7) + (-7) + (-7) + (-7) + (-7)$

c) $-13 + (-13) + (-13) + (-13)$

b) $-2 + (-2) + (-2) + (-2) + (-2)$

d) $-15 + (-15) + (-15)$

a) $(-7) \times 6$

c) $(-13) \times 4$

b) $(-2) \times 5$

d) $(-15) \times 3$

Multiplication is repeated addition

15. Use a pattern to explain each result.

a) $3 \times (-5) = -15$

b) $-4 \times (-7) = 28$

$$a) \quad (-5) + (-5) + (-5) \\ = -15$$

$$b) \quad -(-7) - (-7) - (-7) - (-7) \\ = 28$$

16. Write an integer expression using multiplication for each situation. State the result and the meaning of the result.

a) The temperature rises an average of 2°C every hour. How many degrees does it rise in 4 h?

$$2 \times 4 = 8^{\circ}$$

b) In an investment game, Allen lost \$50 in each of 4 turns. How much did he lose?

$$(-50) \times 4 \\ = -\$200 \\ \Rightarrow \text{lost } \$200$$

c) A submarine dove at a rate of 25 m/min for 8 min. How far did the submarine dive?

$$(-25) \times 8 = -200\text{m} \\ \Rightarrow \text{Dove } 200\text{m}$$

d) In a board game, you lose, in points, 100 times the roll of one number cube. How much do you lose with a roll of 4?

$$(-100) \times 4 \\ = -400 \\ \Rightarrow \text{loss } 400 \text{ pts}$$

17. Write a problem that has a solution of $12 \times (-4)$.

Bunter takes out \$4 from his bank account for 12 consecutive weeks. How much has he taken out?

18. In a tropical ocean location, the temperature decreases by about 3°C for every 25 m in depth. The temperature at the surface is 25°C .

a) What is the water temperature 125 m below the surface?

b) The clearnose skate can live in water with temperatures from 6°C to 27°C . How far below the surface can the skate live?



-3° for every 25m
Start at 25°C

$$\text{a) } \frac{125}{25} = 5 \text{ dives of } 25\text{m}$$

$$\Rightarrow (-3) \times 5 = -15$$

$$\text{Temp} = 25 - 15 = 10^\circ\text{C}$$

$$\text{b) } 25^\circ - 6^\circ = 19^\circ$$

$$3^\circ = 25\text{m}$$

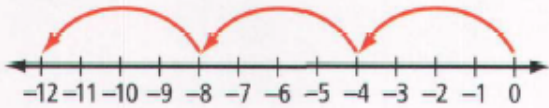
$$19^\circ = x$$

$$\frac{19}{3} = \frac{x}{25}$$

$$\frac{19}{3} \times 25 = x$$

$$158.\bar{3}\text{m}$$

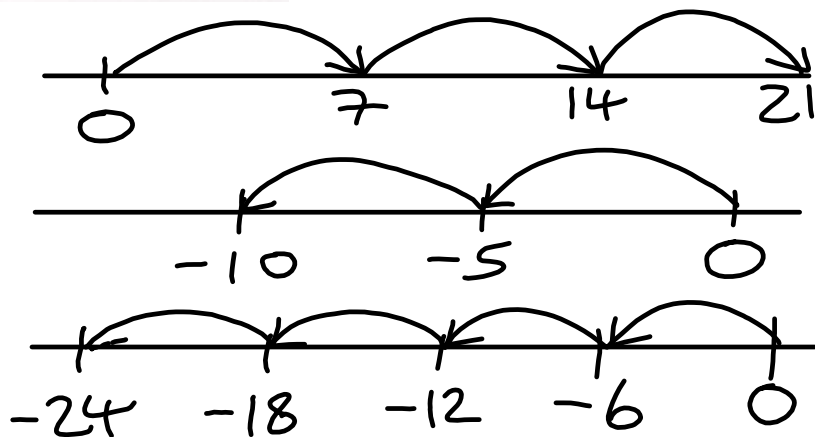
19. Explain how the number line is used to model multiplication of integers.



of steps (3)
 \times
 size of step (-4)

20. Use a number line to model each integer expression.

- a) 3×7
- b) $2 \times (-5)$
- c) $4 \times (-6)$





21. On the stock market, the price of one share of High Flier Airlines dropped by an average of 15¢ per day over 30 days.

- What was the total price change during the first 5 days?
- What was the total price change over the entire 30-day period?
- You buy shares on the 10th day. How much money will you lose, per share, if you sell them on the 20th day?

$$\begin{aligned}(-15) \times 5 &= -75c \\(-15) \times 30 &= -450c \\&\text{loss of } \$4.50\end{aligned}$$

$$\begin{aligned}c) \quad 20 - 10 &= 10 \text{ days} \\(-15) \times 10 &= -150c \\&\text{loss of } \$1.50 \text{ per share}\end{aligned}$$