

Multiplying and Dividing Signed Numbers

Grade 7 math · Worksheet Answer Key · Standards: 7.NS.A.2a, 7.NS.A.2b, 7.NS.A.2c

Each solution gives the sign rule first, then the size of the answer, and checks by multiplying back where it helps. If your sign differs, count the negative factors again.

Standards: 7.NS.A.2a, 7.NS.A.2b, 7.NS.A.2c · **Level:** Grade 7

Problem 1 Five Products

- (a) Different signs: -42 .
- (b) Different signs: -40 .
- (c) Same signs: 36 .
- (d) Same signs: 12 .
- (e) Zero times anything is 0 .

Answer: **-42 , -40 , 36 , 12 , 0**

Problem 2 Four Quotients

- (a) -7 , since $8 \times (-7) = -56$.
- (b) -8 , since $(-9)(-8) = 72$.
- (c) 9 , since $(-5)(9) = -45$.
- (d) 0 .

Answer: **-7 , -8 , 9 , 0**

Problem 3 Sign of a Long Product

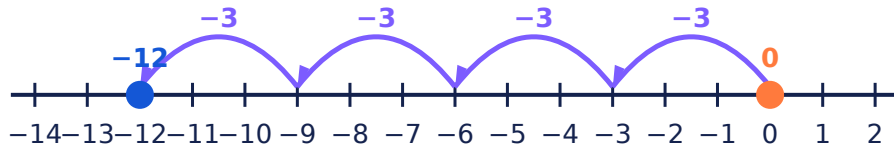
- (a) Three negative factors (odd), so negative: $3 \times 2 \times 5 \times 4 = 120$, giving -120 .
- (b) Four negative factors (even), so positive: $2 \times 6 \times 1 \times 3 = 36$.

Answer: **-120 and 36**

Problem 4 Jumps on a Number Line

Each jump moves 3 units left: -3 , -6 , -9 , -12 .

Answer: $4 \times (-3) = -12$



$$4 \times (-3) = -12.$$

Problem 5 Falling Temperature

Change: $5 \times (-3) = -15$.

$8 + (-15) = -7$.

Answer: -7°F

Problem 6 Pattern for Two Negatives

The products rise by 2 each row: after -2 comes 0, then 2, then 4.

So $0 \times (-2) = 0$, $(-1)(-2) = 2$ and $(-2)(-2) = 4$.

Answer: **0, 2, 4; the product of two negative numbers is positive**

Product	Result
$0 \times (-2)$	0
$(-1) \times (-2)$	2
$(-2) \times (-2)$	4

The products rise by 2 each row.

Problem 7 Decimal Products

(a) $2.5 \times 4.2 = 10.5$, and the signs differ: -10.5 .

(b) $0.6 \times 0.35 = 0.21$, and the signs match: 0.21.

Answer: **-10.5 and 0.21**

Problem 8 Fraction Products

(a) $\frac{2}{3} \times \frac{9}{10} = \frac{18}{30} = \frac{3}{5}$; signs differ: $-\frac{3}{5}$.

(b) $\frac{5}{8} \times \frac{4}{15} = \frac{20}{120} = \frac{1}{6}$; signs match: $\frac{1}{6}$.

Answer: $-\frac{3}{5}$ and $\frac{1}{6}$

Problem 9 Fraction Quotients

(a) $-\frac{3}{4} \times \frac{16}{9} = -\frac{48}{36} = -\frac{4}{3} = -1\frac{1}{3}$.

(b) $\frac{5}{6} \times \frac{12}{5} = \frac{60}{30} = 2$, positive because the signs match.

Answer: $-1\frac{1}{3}$ and 2

Problem 10 Division and Zero

(a) $0 \div (-8) = 0$, since $(-8) \times 0 = 0$.

(b) $-7 \div 0$ is undefined.

(c) If $-7 \div 0 = q$, then $q \times 0$ would have to equal -7 . But any number times 0 is 0, so no such q exists.

Answer: **0; undefined; no number times 0 gives -7**

Problem 11 Equivalent Forms of a Fraction

(a) $\frac{8}{(-11)}$: different signs, so negative, $-\frac{8}{11}$. Yes.

(b) $\frac{(-8)}{(-11)}$: same signs, so $\frac{8}{11}$. No.

(c) $-(\frac{8}{11}) = -\frac{8}{11}$. Yes.

(d) $-(-\frac{8}{11}) = \frac{8}{11}$. No.

Answer: **(a) and (c)**

Problem 12 Distributive Property with a Negative

Way 1: $-4 \times 7 = -28$.

Way 2: $-4 \times 10 + (-4) \times (-3) = -40 + 12 = -28$.

Answer: **Both ways give -28**

Problem 13 Descending Drone

Change: $6 \times (-7.5) = -45$.

Final height: $120 + (-45) = 75$.

Answer: **-45 feet; 75 feet**

Problem 14 Average Change

Sum: $-3 + (-7) + 2 + (-4) = -12$.

$-12 \div 4 = -3$.

Answer: **-3°F per day**

Problem 15 Monthly Fees

Change: $7 \times (-4.25) = -29.75$.

Balance: $50.00 + (-29.75) = 20.25$.

Number of fees: $-29.75 \div (-4.25) = 7$.

Answer: **-\$29.75; \$20.25; 7 fees**

Problem 16 Evaluating with Variables

(a) $(-6)(4) = -24$, and $-24 \div (-2) = 12$.

(b) $bc = -8$, and $-6 \div (-8) = \frac{3}{4}$.

(c) $(-6)(4)(-2) = 48$.

Answer: **12, $\frac{3}{4}$, 48**

Problem 17 Mountain Temperatures

The climb is $9,000 - 2,000 = 7,000$ feet, which is 7 thousands.

Change: $7 \times (-3.5) = -24.5$.

$61 + (-24.5) = 36.5$.

Answer: **36.5°F**

Problem 18 Stock Price Changes

Losses: $6 \times (-1.35) = -8.10$. Gains: $4 \times 0.90 = 3.60$.

Net per share: $-8.10 + 3.60 = -4.50$.

Final price: $42.00 - 4.50 = 37.50$.

200 shares: $200 \times (-4.50) = -900$.

Answer: **−\$4.50 per share; \$37.50; −\$900**

Problem 19 Why $(-1)(-1) = 1$

$1 + (-1) = 0$, so $(-1)(1 + (-1)) = (-1) \times 0 = 0$.

Distribute: $(-1)(1) + (-1)(-1) = -1 + (-1)(-1)$.

So $-1 + (-1)(-1) = 0$. The number that must be added to -1 to give 0 is its opposite, 1.

Answer: **$(-1)(-1) = 1$**

Problem 20 Submarine Rates

Descent: $8 \times (-12.5) = -100$, so the position is $-40 + (-100) = -140$.

Rise: $3.5 \times 20 = 70$, so the position is $-140 + 70 = -70$.

Net change: $-70 - (-40) = -30$.

Answer: **−70 meters; net change −30 meters**