

1.3 Multiplication and division of integers

We multiply or divide the absolute value of the integers.

The sign of the result is:

$(+) \cdot (+)$ or $(+) / (+)$	$\rightarrow (+)$	$4 \cdot 2 = 8$	$4 / 2 = 2$
$(-) \cdot (+)$ or $(-) / (+)$	$\rightarrow (-)$	$-4 \cdot 2 = -8$	$4 / -2 = -2$
$(+) \cdot (-)$ or $(+) / (-)$	$\rightarrow (-)$	$4 \cdot -2 = -8$	$-4 / 2 = -2$
$(-) \cdot (-)$ or $(-) / (-)$	$\rightarrow (+)$	$-4 \cdot -2 = 8$	$-4 / -2 = 2$

1 Multiply these integers: $5 \cdot (-4)$

First, we multiply the absolute values: $|5| \cdot |4| = 20$

Second, we put the sign to the result $(+) \cdot (-) \rightarrow (-)$, so the result is: **-20**

2 Divide these integers $5 / (-4)$

First, we divide the absolute values: $|5| / |4| = 1.2$

Second, we put the sign to the result $(+) \cdot (-) \rightarrow (-)$, so the result is: **-1.2**

6 Multiply these integers

- | | | |
|----------------------|----------------------|------------------------|
| a) $6 \cdot (-2)$ | e) $(-7) \cdot (-4)$ | i) $65 \cdot (-86)$ |
| b) $3 \cdot (-5)$ | f) $1 \cdot 5$ | j) $28 \cdot 144$ |
| c) $(-7) \cdot 2$ | g) $1 \cdot (-5)$ | k) $(-37) \cdot (-46)$ |
| d) $(-7) \cdot (-2)$ | h) $(-2) \cdot 2$ | l) $(-468) \cdot (-5)$ |

7 Divide these integers

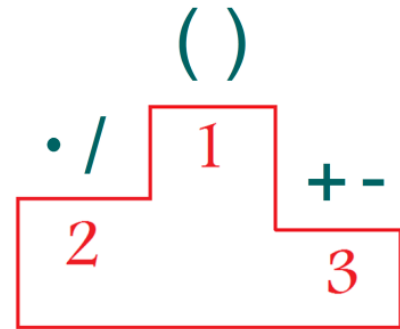
- | | | |
|------------------|------------------|--------------------|
| a) $4 / (-2)$ | e) $(-2) / 2$ | i) $80 / 5$ |
| b) $10 / (-5)$ | f) $(-2) / (-2)$ | j) $(-80) / (-20)$ |
| c) $(-8) / (-2)$ | g) $(-10) / 2$ | k) $128 / 64$ |
| d) $12 / (-3)$ | h) $(-7) / (-4)$ | l) $512 / (-256)$ |

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1.4 Order of operations

Sometimes there is a combination of operations; in that case, follow this order:

- 1st** Operations inside brackets
- 2nd** Multiplication and division
- 3rd** Addition and subtraction



Distributive property

To multiply a number by the sum of others is the same thing as multiplying the number by each of the numbers in the addition.

$$a \cdot (b + c) = a \cdot b + a \cdot c$$

$$a(b+c) = ab+ac$$

Solve:

$$\begin{aligned} \text{a) } & 7 \cdot (2 + 3) \\ & = 7 \cdot 5 \\ & = 35 \end{aligned}$$

$$\begin{aligned} & 7 \cdot 2 + 7 \cdot 3 \\ & = 14 + 21 \\ & = 35 \end{aligned}$$

$$\begin{aligned} \text{b) } & 8 + [(4 + 3) \cdot 4] \\ & = 8 + (7 \cdot 4) \\ & = 8 + 28 \\ & = 36 \end{aligned}$$

$$\begin{aligned} & 8 + 4 \cdot 4 + 3 \cdot 4 \\ & = 8 + 16 + 12 \\ & = 36 \end{aligned}$$

9 Which type of operations is first in the order of operations?

10 Which type of operations is second in the order of operations?

11 Which type of operations is third in the order of operations?

12 Solve:

- a) $1 + 5 \cdot (2 + 6)$
- b) $7 \cdot 5 - 7 \cdot (4 + 1)$
- c) $6 - 2 \cdot (6 + 1) \cdot (4 \cdot 3)$
- d) $9 \cdot 5 \cdot 1 - (20 \cdot 5)$

13 Solve:

- a) $2 + [(5 + 2) \cdot 4] \cdot (8 + 2)$
- b) $4 + 2 \cdot [(3 + 1) \cdot (2 \cdot 5)]$
- c) $2 + [(5 + 2) \cdot 4] \cdot (8 + 2)$
- d) $5 - (5 + 6) \cdot 5 + 3 \cdot [2 \cdot 8 \cdot (3 + 1)]$