

Boost Free Lessons - Year 8 Maths

Lesson 1: Order of Operations

Name: _____ Grade: _____ Date: _____

Worked Example 1

Evaluate $-4 + 3 \times (-5)$

1. There is nothing to simplify inside the brackets, so move on.
2. Multiplication comes before addition: $3 \times (-5) = -15$.
3. Now the question is $-4 + (-15)$, which is the same as $-4 - 15$.

= -19

Worked Example 2

Evaluate $(-2)^3 + 6 \div (-3)$

1. Indices come first: $(-2)^3$ means $-2 \times -2 \times -2 = -8$.
2. Division comes next: $6 \div (-3) = -2$.
3. Now add what is left: $-8 + (-2)$.

= -10

Remember: Work in this order: **B**rackets, **I**ndices, **D**ivision and **M**ultiplication (left to right), then **A**ddition and **S**ubtraction (left to right). A negative raised to an even power is positive, to an odd power is negative.



Question 1: Evaluate the following.

1. $-3 + 5 \times 2$

2. $12 \div (-4) + 7$

3. $(-6) \times 3 - 8$

4. $20 - 5 \times (-2)$

5. $-15 \div 3 + 9$

6. $4 \times (-7) + 30$

7. $-8 - 6 \div 2$

8. $(-9) \times (-2) - 5$

9. $24 \div (-6) \times 2$

10. $-10 + 18 \div (-3)$



Question 2: Evaluate the following.

1. $3 \times (5 - 9)$

2. $(-4)^2 + 1$

3. $(-3)^3 - 2$

4. $(7 - 10)^2$

5. $2 \times (-3)^2$

6. $(12 \div 4)^3$

7. $5 - (2 - 8)^2$

8. $(-5)^2 \div (-5)$

9. $4 + 2 \times (1 - 6)$

10. $(-2)^4 + (-2)^3$



Question 3: Answer the following questions.

1. The temperature is 8°C and drops 3°C every hour for 5 hours. Write a single number sentence and find the final temperature.
2. A diver descends 4 m every minute for 7 minutes from the surface, then rises 10 m. Write a number sentence for her depth and evaluate it.
3. Find the value of $(-3)^2 - (-3)$.
4. Maya says $(-4)^2 = -16$. Explain her mistake and give the correct answer.
5. A shop loses \$250 each week for 6 weeks, then makes \$900 in week 7. Write a number sentence and find the net result.





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Answers: Order of Operations**Question 1**

- | | |
|--------|---------|
| 1. 7 | 6. 2 |
| 2. 4 | 7. -11 |
| 3. -26 | 8. 13 |
| 4. 30 | 9. -8 |
| 5. 4 | 10. -16 |

Question 2

- | | |
|--------|--------|
| 1. -12 | 6. 27 |
| 2. 17 | 7. -31 |
| 3. -29 | 8. -5 |
| 4. 9 | 9. -6 |
| 5. 18 | 10. 8 |

Question 3

- $8 + 5 \times (-3) = -7^{\circ}\text{C}$
- $7 \times (-4) + 10 = -18 \text{ m}$
- 12
- The bracket means the whole of -4 is squared: $-4 \times -4 = 16$, so the answer is 16.
- $6 \times (-250) + 900 = -\$600$

