

Order of Operations

Name: _____ Date: _____ Score: _____ / 24

Q Quick Review

PEMDAS is the order: **P**arentheses (and any other grouping symbols — brackets, the fraction bar, the inside of an absolute value, and the inside of a radical), then **E**xponents, then **M**ultiplication and **D**ivision left to right (they tie — whichever shows up first wins), then **A**ddition and **S**ubtraction left to right (also a tie). The classic trap is the difference between -2^2 and $(-2)^2$. In -2^2 the minus sign sits *outside* the power, so you square the 2 first and then negate: $-(2^2) = -4$. In $(-2)^2$ the minus is *inside* the parentheses, so it's part of the base: $(-2)(-2) = 4$. The fraction bar acts as one big set of parentheses around the top and another around the bottom — finish each completely before you divide.

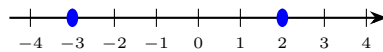
PRACTICE

Evaluate each expression. Show your work.

1. $24 - 3 \cdot 2^3 + 6 \div 2$ _____
2. $5[3 - (4 - 7)^2 + 2] - 8$ _____
3. $12 + 3(4 - 2)^2$ _____
4. The table below records the value of each piece of $\sqrt{36} + 2(5 - 1) - 3^2$. Use it to find the total. _____

piece	$\sqrt{36}$	$2(5 - 1)$	3^2
value	6	8	9

5. $\frac{(3^2 - 2)(4 + 1)}{(8 - 5)^2 - 4}$ _____
6. $\sqrt{5^2 - 3^2} + |2(-3) + 5| - 2 \cdot 3$ _____
7. $-3^2 + (-3)^2 - (-3)^3$ _____
8. $2^3 + (5 - 2)^2 \cdot 4 - 3$ _____
9. $\frac{|(-2)^3 + 3 \cdot 2|}{2} + 1$ _____
10. $\frac{3^4 - 2^4}{3^2 + 2^2} - |2 - 7| + 5$ _____
11. $4 + 2[3(5 - 2)^2 - 6 \div 3 \cdot 4 + 1]$ _____
12. $18 - 2[4 + (9 - 3)^2 \div 6]$ _____
13. $5^2 - 3(8 - 5)^2 + 12 \div 4$ _____
14. $-4 + 6[2^3 - (7 - 4) \cdot 2]$ _____
15. On the number line below, the two marked points are -3 and 2 . Evaluate $|-3| \cdot |2|$ using their distances from zero. _____



16. A student evaluates $25 + 4(5)^2 - 6(5 - 1)$ and records the value of each chunk in the table below. Use _____ the table to finish the calculation.

chunk	value
$4(5)^2$	100
$6(5 - 1)$	24
leading 25	25

17. $\frac{900}{3 + (5 - 2)^2} - 15$ _____
18. $2 + 3(4 - 1)^2$ _____
19. $(2 + 3)(4 - 1)^2$ _____
20. $\frac{(-4)^2 - 2 \cdot 3}{|3 - 8|}$ _____

◆ Word Problems

21. A ticket costs \$16.50. A discount of $\$1.50(3 - 1)^2$ is applied. What is the final price? _____
22. A projectile's height (in feet) above the ground at time t seconds is given by $g(t) = -16t^2 + 48t + 5$. Find $g(2)$. _____
23. A math team's bonus after round r is $P(r) = \frac{900}{3 + (r - 2)^2} - 15$ points. What is $P(5)$? _____
24. A school design club uses the expression $25 + 4(5)^2 - 6(5 - 1)$ to find the cost (in dollars) for 5 batches of custom decals. What is the cost? _____



Answer Keys

- | | |
|--------|---------------|
| 1. 3 | 13. 1 |
| 2. -28 | 14. 8 |
| 3. 24 | 15. 6 |
| 4. 5 | 16. 101 |
| 5. 7 | 17. 60 |
| 6. -1 | 18. 29 |
| 7. 27 | 19. 45 |
| 8. 41 | 20. 2 |
| 9. 2 | 21. \$10.50 |
| 10. 5 | 22. 37 ft |
| 11. 44 | 23. 60 points |
| 12. -2 | 24. \$101 |

Step-by-Step Explanations

- Exponent: $2^3 = 8$. Multiply and divide left to right: $3 \cdot 8 = 24$, $6 \div 2 = 3$. Combine: $24 - 24 + 3 = 3$.
- Inside out. $4 - 7 = -3$, then $(-3)^2 = 9$ (the parentheses keep the negative attached to the base). Bracket becomes $3 - 9 + 2 = -4$. Now $5(-4) - 8 = -20 - 8 = -28$.
- Parentheses first: $4 - 2 = 2$. Then exponent: $2^2 = 4$. Multiply: $3 \cdot 4 = 12$. Add: $12 + 12 = 24$. (The exponent only acts on the simplified inside, not on the 3.)
- Each special piece is handled before you combine: the radical gives 6, the parentheses-times-2 gives 8, and the power gives 9. Now add and subtract left to right: $6 + 8 - 9 = 5$.
- The fraction bar is a giant pair of parentheses. Top: $(9 - 2)(5) = 7 \cdot 5 = 35$. Bottom: $(8 - 5)^2 - 4 = 9 - 4 = 5$. Then $35 \div 5 = 7$.
- Three small problems. Under the radical: $25 - 9 = 16$, so $\sqrt{16} = 4$. Inside the absolute value: $-6 + 5 = -1$, so $|-1| = 1$. And $2 \cdot 3 = 6$. Combine: $4 + 1 - 6 = -1$.
- Sign-vs-parentheses workout. $-3^2 = -(3^2) = -9$ (negative is outside the power). $(-3)^2 = 9$ (negative is the base). $(-3)^3 = -27$. Plug in: $-9 + 9 - (-27) = 0 + 27 = 27$.
- Parens first: $5 - 2 = 3$, then $3^2 = 9$. Exponents elsewhere: $2^3 = 8$. Multiply: $9 \cdot 4 = 36$. Combine: $8 + 36 - 3 = 41$.
- Inside the bars first: $(-2)^3 = -8$, $3 \cdot 2 = 6$, sum is -2 . Absolute value: $|-2| = 2$. Then $\frac{2}{2} + 1 = 1 + 1 = 2$.
- Top of the fraction: $81 - 16 = 65$. Bottom: $9 + 4 = 13$. Fraction: $\frac{65}{13} = 5$. Then $|2 - 7| = |-5| = 5$. Combine left to right: $5 - 5 + 5 = 5$.
- Innermost: $5 - 2 = 3$, then $3^2 = 9$. Multiply: $3 \cdot 9 = 27$. The $6 \div 3 \cdot 4$ goes left to right: $6 \div 3 = 2$, then $2 \cdot 4 = 8$. Bracket: $27 - 8 + 1 = 20$. Outside: $2 \cdot 20 = 40$, plus the leading 4 gives 44.
- Work inside the brackets first. Parentheses: $9 - 3 = 6$, then $6^2 = 36$, then $36 \div 6 = 6$. The bracket is $4 + 6 = 10$, so $18 - 2(10) = 18 - 20 = -2$.
- Parentheses first: $8 - 5 = 3$, then $3^2 = 9$. Also $5^2 = 25$. Multiply and divide before adding/subtracting: $3 \cdot 9 = 27$ and $12 \div 4 = 3$. Now $25 - 27 + 3 = 1$.
- Inside the bracket: $2^3 = 8$ and $7 - 4 = 3$, so $(7 - 4) \cdot 2 = 6$. The bracket becomes $8 - 6 = 2$. Then $-4 + 6(2) = -4 + 12 = 8$.
- Absolute value is distance from zero. The point at -3 is 3 units away, and the point at 2 is 2 units away. So $|-3| = 3$ and $|2| = 2$. Multiply: $3 \cdot 2 = 6$.
- The table already did the powers and parentheses for you. Now just combine left to right: $25 + 100 - 24 = 101$. (The exponent and the parentheses always settle before the adding and subtracting.)
- Build the denominator first. $5 - 2 = 3$, then $3^2 = 9$, so $3 + 9 = 12$. Then $\frac{900}{12} = 75$, and $75 - 15 = 60$.
- Parens: $4 - 1 = 3$, then $3^2 = 9$. Only the 3 multiplies the 9: $3 \cdot 9 = 27$. Then $2 + 27 = 29$. (Compare to $(2 + 3)(4 - 1)^2 = 5 \cdot 9 = 45$ — grouping matters.)
- Parens on the left: $2 + 3 = 5$. Parens on the right: $4 - 1 = 3$, then $3^2 = 9$. Multiply: $5 \cdot 9 = 45$.
- Top: $(-4)^2 = 16$ (negative inside the parens, so base is -4), $2 \cdot 3 = 6$, so $16 - 6 = 10$. Bottom: $|3 - 8| = |-5| = 5$. Then $10 \div 5 = 2$.
- Build the discount carefully. Parens: $3 - 1 = 2$. Square: $2^2 = 4$. Multiply: $1.50 \cdot 4 = 6.00$. Subtract from the ticket: $16.50 - 6.00 = \$10.50$. (Common slip: multiplying $1.50 \cdot 2$ before squaring. The exponent belongs to the parens.)
- Substitute $t = 2$ with parentheses around it so the sign stays put. Exponent first: $(2)^2 = 4$. Multiply each term: $-16 \cdot 4 = -64$ and $48 \cdot 2 = 96$. Add the constant: $-64 + 96 + 5 = 37$ feet.
- Build the denominator before dividing. $r - 2 = 3$, then $3^2 = 9$, so $3 + 9 = 12$. Now the fraction: $\frac{900}{12} = 75$. Subtract: $75 - 15 = 60$ bonus points.
- Knock out the powers and parens first. $5^2 = 25$, so $4(25) = 100$. And $5 - 1 = 4$, so $6(4) = 24$. Now add and subtract left to right: $25 + 100 - 24 = 101$ dollars.



Build Algebra Confidence From Pre-Algebra Through Algebra II



The Complete Algebra Success Bundle

Pre-Algebra, Algebra I, and Algebra II in one clear path

Friendly lessons, focused practice, and full-review support for every stage.



Scan for the Bundle

6 Books
3 Courses
1 Path

Bundle Value: Six coordinated books help students review missing skills, learn new algebra topics, and practice until the steps feel natural.

Complete Course Path

- ✓ Starts with Pre-Algebra foundations
- ✓ Moves smoothly into Algebra I skills
- ✓ Extends learning through Algebra II topics
- ✓ Great for review, tutoring, and summer study

One bundle, one steady path.

Step-by-Step Lessons

- ✓ Plain-English explanations students can follow
- ✓ Worked examples that show every important step
- ✓ Common mistakes called out before they stick
- ✓ Skill-building practice after each lesson
- ✓ Helpful for independent study or class support

Less guessing. More understanding.

Practice That Sticks

- ✓ Matching practice workbooks for extra repetition
- ✓ Review sets to keep older skills fresh
- ✓ Answer explanations for checking thinking
- ✓ Strong support before tests and final exams
- ✓ Designed to build fluency and confidence

Practice today. Remember tomorrow.

STUDENT FAVORITE • Master Algebra II From the Ground Up



Algebra II for Beginners

Written by a top math teacher & aligned with national and state Algebra II courses. From polynomial functions to logarithms, trigonometry, and rational expressions — explained the easy way.

- ✓ **Complete coverage** of every Algebra II concept — perfect companion to these worksheets
- ✓ **Step-by-step explanations** with worked examples on every topic
- ✓ **QR codes in every chapter** for free video lessons & bonus practice
- ✓ **2 full-length practice tests** with detailed answer keys

- ✓ 100% Guaranteed
- ✓ Lifetime Support
- ✓ Trusted by Teachers

Start Your Algebra Journey Today! →

★ STUDENT'S #1 CHOICE ★

Teacher-recommended • 12,000+ Happy Students

PDF EDITION



Instant download • any device

PAPERBACK



Paperback on Amazon

Hold it in your hands

Pair these free worksheets with *Algebra II for Beginners* and you have a complete self-paced course — concept lessons, daily practice, and full exam-style reviews, all in one path. → EffortlessMath.com/product/algebra-ii-for-beginners