

Math 2 Unit 8 Worksheet 5
Rational and Irrational Numbers

Name: _____
Date: _____ Per: _____

[1-27] Simplify radical expressions, then circle **R** for rational answers and **Ir** for Irrational answers.

1. $-\frac{1}{4} + \frac{2}{5}$ _____ R Ir 2. $2\sqrt{5} + 6\sqrt{5}$ _____ R Ir

3. $5\sqrt{13} - 7\sqrt{13}$ _____ R Ir 4. $4\sqrt{11} + \sqrt{11}$ _____ R Ir

5. $(3 + 6\sqrt{17}) + (4 + 2\sqrt{17})$ _____ R Ir 6. $2\sqrt{6} + 7\sqrt{3}$ _____ R Ir

7. $(3 + 7\sqrt{2}) - (-5 + 7\sqrt{2})$ _____ R Ir 8. $2 + 8\sqrt{6} - 2 + \sqrt{6}$ _____ R Ir

9. $-\frac{3}{5} \cdot \frac{4}{9}$ _____ R Ir 10. $3\sqrt{7} \cdot 2\sqrt{7}$ _____ R Ir

11. $5\sqrt{3} \cdot 2\sqrt{3}$ _____ R Ir 12. $-2\sqrt{5} \cdot 7\sqrt{3}$ _____ R Ir

13. $4\sqrt{12} \cdot 2\sqrt{3}$ _____ R Ir 14. $4\sqrt{6} \cdot \sqrt{8}$ _____ R Ir

15. $3\sqrt{7} \cdot 6\sqrt{14}$ _____ R Ir 16. $7\sqrt{5} \cdot 2\sqrt{5}$ _____ R Ir

17. $\frac{7\sqrt{75}}{\sqrt{3}}$ _____ R Ir 18. $\frac{3\sqrt{10}}{7\sqrt{5}}$ _____ R Ir

[19-25] Based on the work you completed in problems 1-18, make the following conjectures.

19. What can you say about the sum of any two rational numbers?

20. What can you say about the sum of a rational and irrational number?

21. What can you say about the product of any two rational numbers?

22. What can you say about the product of a rational and irrational number?

23. Can the sum of two irrational numbers be rational?

Give an example:

24. Can the product of two irrational numbers be rational?

Give an example:

25. From the numbers: 5, 6, $2\sqrt{6}$, $2 - \sqrt{6}$, $\sqrt{5}$, $\sqrt{6}$, choose two numbers that when you:

a. multiply them, it is rational, AND when you add the same two numbers, it is irrational. _____

b. multiply them, it is irrational, AND when you add the same two numbers, it is irrational. _____

[26-29] Simplify and determine whether each expression is **equivalent** to $8x^{\frac{5}{4}}$. Check the appropriate box.

		Yes	No
26.	$16^{\frac{3}{4}} x^{\frac{5}{4}}$		
27.	$16x^{\frac{5}{4}}$		
28.	$8\sqrt[4]{x^5}$		
29.	$\sqrt[4]{8x^5}$		