

# Practice 11-1

## Square Roots and Irrational Numbers

Estimate to the nearest integer.

- |                      |                      |                      |
|----------------------|----------------------|----------------------|
| 1. $\sqrt{18}$ _____ | 2. $\sqrt{24}$ _____ | 3. $\sqrt{50}$ _____ |
| 4. $\sqrt{8}$ _____  | 5. $\sqrt{62}$ _____ | 6. $\sqrt{78}$ _____ |
| 7. $\sqrt{98}$ _____ | 8. $\sqrt{46}$ _____ | 9. $\sqrt{38}$ _____ |

Simplify each square root.

- |                                  |                                 |                                    |
|----------------------------------|---------------------------------|------------------------------------|
| 10. $\sqrt{144}$ _____           | 11. $\sqrt{9 + 16}$ _____       | 12. $\sqrt{900}$ _____             |
| 13. $\sqrt{169}$ _____           | 14. $-\sqrt{100}$ _____         | 15. $\sqrt{0.16}$ _____            |
| 16. $\sqrt{\frac{16}{81}}$ _____ | 17. $\sqrt{\frac{4}{25}}$ _____ | 18. $\sqrt{\frac{121}{144}}$ _____ |

Identify each number as rational or irrational.

- |                        |                          |
|------------------------|--------------------------|
| 19. $\sqrt{289}$ _____ | 20. $5.7777\dots$ _____  |
| 21. $\sqrt{41}$ _____  | 22. $0.62662\dots$ _____ |
| 23. $\sqrt{49}$ _____  | 24. $\sqrt{52}$ _____    |

Find two integers that make each equation true.

- |                      |                        |
|----------------------|------------------------|
| 25. $x^2 = 16$ _____ | 26. $3m^2 = 147$ _____ |
|----------------------|------------------------|

Use the formula  $d = \sqrt{1.5h}$  to estimate the distance to the horizon  $d$  in miles for each viewer's eye height  $h$ , in feet.

- |                          |                           |                           |
|--------------------------|---------------------------|---------------------------|
| 27. $h = 12$ ft<br>_____ | 28. $h = 216$ ft<br>_____ | 29. $h = 412$ ft<br>_____ |
|--------------------------|---------------------------|---------------------------|

30. The Moon has a surface area of approximately 14,650,000  $\text{mi}^2$ . Estimate its radius to the nearest mile.  
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