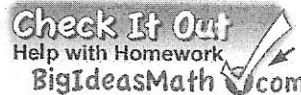


# 4.4 Exercises



## Vocabulary and Concept Check

- VOCABULARY** Describe the difference between a linear function and a nonlinear function.
- WHICH ONE DOESN'T BELONG?** Which equation does *not* belong with the other three? Explain your reasoning.

$$5y = 2x$$

$$y = \frac{2}{5}x$$

$$10y = 4x$$

$$5xy = 2$$

## Practice and Problem Solving

Graph the data in the table. Decide whether the function is *linear* or *nonlinear*.

3.

x	0	1	2	3
y	4	8	12	16

4.

x	1	2	3	4
y	1	2	6	24

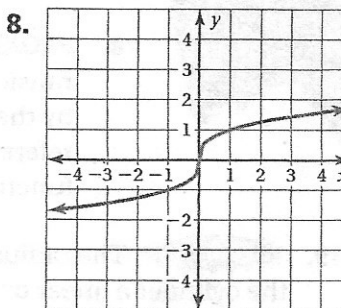
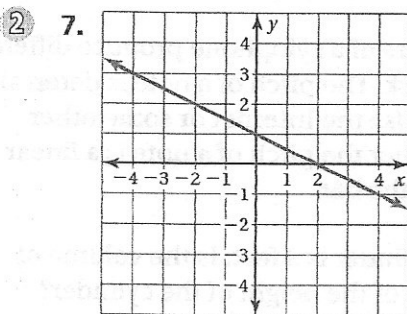
5.

x	6	5	4	3
y	21	15	10	6

6.

x	-1	0	1	2
y	-7	-3	1	5

Does the table or graph represent a *linear* or *nonlinear* function? Explain.



9.

x	5	11	17	23
y	7	11	15	19

10.

x	-3	-1	1	3
y	9	1	1	9

11. **VOLUME** The table shows the volume  $V$  (in cubic feet) of a cube with a side length of  $x$  feet. Does the table represent a linear or nonlinear function? Explain.

Side Length, $x$	1	2	3	4	5	6	7	8
Volume, $V$	1	8	27	64	125	216	343	512

Does the equation represent a *linear* or *nonlinear* function? Explain.

12.  $2x + 3y = 7$

13.  $y + x = 4x + 5$

14.  $y = \frac{8}{x^2}$

15. **SUNFLOWER SEEDS** The table shows the cost  $y$  (in dollars) of  $x$  pounds of sunflower seeds.

Pounds, $x$	Cost, $y$
2	2.80
3	?
4	5.60

- What is the missing  $y$ -value that makes the table represent a linear function?
- Write a linear function that represents the cost  $y$  of  $x$  pounds of seeds.



16. **LIGHT** The frequency  $y$  (in terahertz) of a light wave is a function of its wavelength  $x$  (in nanometers). Does the table represent a linear or nonlinear function? Explain.

Color	Red	Yellow	Green	Blue	Violet
Wavelength, $x$	660	595	530	465	400
Frequency, $y$	454	504	566	645	749

17. **LIGHTHOUSES** The table shows the heights  $x$  (in feet) of four Florida lighthouses and the number  $y$  of steps in each. Does the table represent a linear or nonlinear function? Explain.

Lighthouse	Height, $x$	Steps, $y$
Ponce de Leon Inlet	175	213
St. Augustine	167	219
Cape Canaveral	145	179
Key West	86	98



18. **PROJECT** The wooden bars of a xylophone produce different musical notes when struck. The pitch of a note is determined by the length of the bar. Use the Internet or some other reference to decide whether the pitch of a note is a linear function of the length of the bar.

19. **Geometry** The radius of the base of a cylinder is 3 feet. Is the volume of the cylinder a linear or nonlinear function of the height of the cylinder?



**Fair Game Review** What you learned in previous grades & lessons

Classify <sup>each</sup> the angle as *acute*, *obtuse*, *right*, or *straight*.

SKILLS REVIEW HANDBOOK

20.



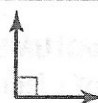
21.



22.



23.



24. **MULTIPLE CHOICE** What is the value of  $x$ ?

- (A) 30      (B) 60      (C) 90      (D) 180

SECTION

