

F.IF.C.7: Graphing Trigonometric Functions 2b

- 1 How many full cycles of the function $y = 3 \sin 2x$ appear in π radians?
- 2 What is the period of the function $y = 5 \sin 3x$?
- 3 What is the period of the graph $y = \frac{1}{2} \sin 6x$?
- 4 What is the period of the function $f(\theta) = -2 \cos 3\theta$?
- 5 What is the period of the graph of the equation $y = \frac{1}{3} \sin 2x$?
- 6 What is the period of the graph of the equation $y = 2 \sin \frac{1}{3} x$?
- 7 What is the period of $y = \sin 2x$?
- 8 What is the period of the function $y = \frac{1}{2} \sin\left(\frac{x}{3} - \pi\right)$?
- 9 A certain radio wave travels in a path represented by the equation $y = 5 \sin 2x$. What is the period of this wave?
- 10 A sound wave is modeled by the curve $y = 3 \sin 4x$. What is the period of this curve?
- 11 A wave displayed by an oscilloscope is represented by the equation $y = 3 \sin x$. What is the period of this function?
- 12 A modulated laser heats a diamond. Its variable temperature, in degrees Celsius, is given by $f(t) = T \sin at$. What is the period of the curve?
- 13 An object that weighs 2 pounds is suspended in a liquid. When the object is depressed 3 feet from its equilibrium point, it will oscillate according to the formula $x = 3 \cos(8t)$, where t is the number of seconds after the object is released. How many seconds are in the period of oscillation?

- 14 The Sea Dragon, a pendulum ride at an amusement park, moves from its central position at rest according to the trigonometric function

$P(t) = -10 \sin\left(\frac{\pi}{3} t\right)$, where t represents time, in seconds. How many seconds does it take the pendulum to complete one full cycle?

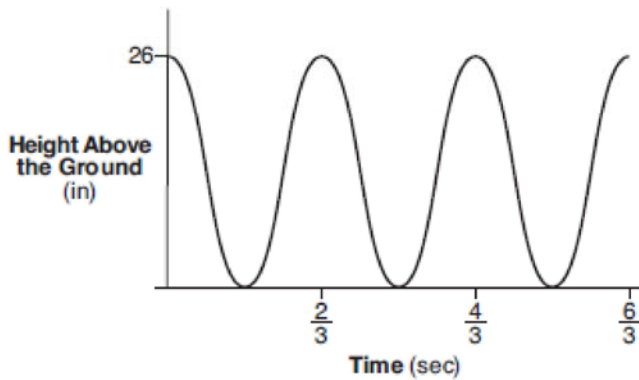
- 16 Which equation represents a graph that has a period of 4π ?

- 1) $y = 3 \sin \frac{1}{2} x$
- 2) $y = 3 \sin 2x$
- 3) $y = 3 \sin \frac{1}{4} x$
- 4) $y = 3 \sin 4x$

- 15 The brightness of the star MIRA over time is given

by the equation $y = 2 \sin \frac{\pi}{4} x + 6$, where x represents time and y represents brightness. What is the period of this function, in radian measure?

- 17 The graph below represents the height above the ground, h , in inches, of a point on a triathlete's bike wheel during a training ride in terms of time, t , in seconds.



Identify the period of the graph and describe what the period represents in this context.

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Answer Section

1 ANS:

$$1$$

$$\frac{2\pi}{2} = \pi$$

$$\frac{\pi}{\pi} = 1$$

REF: 061519a2

2 ANS:

$$\frac{2\pi}{3}$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{3}$$

REF: 080113b

3 ANS:

$$\frac{\pi}{3}$$

$$\frac{2\pi}{6} = \frac{\pi}{3}$$

REF: 061413a2

4 ANS:

$$\frac{2\pi}{3}$$

$$\frac{2\pi}{b} = \frac{2\pi}{3}$$

REF: 061111a2

5 ANS:

$$\pi$$

$$\frac{2\pi}{2} = \pi$$

REF: 081519a2

6 ANS:

$$6\pi$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{\frac{1}{3}} = 6\pi$$

REF: 080615b

7 ANS:

$$\pi$$

REF: 069025siii

8 ANS:

$$6\pi$$

$$\frac{2\pi}{b} = \frac{2\pi}{\frac{1}{3}} = 6\pi$$

REF: 061027a2

9 ANS:

$$\pi$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{2} = \pi$$

REF: 080514b

10 ANS:

$$\frac{\pi}{2}$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{4} = \frac{\pi}{2}$$

REF: 010606b

11 ANS:

$$2\pi$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{1} = 2\pi$$

REF: 010810b

12 ANS:

$$\frac{2\pi}{a}$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{a}$$

REF: 060105b

13 ANS:

$$\frac{\pi}{4}$$

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{8} = \frac{\pi}{4}$$

REF: 010204b

14 ANS:
6

$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{\frac{\pi}{3}} = 6$$

REF: 060920b

15 ANS:

$$8. \text{ period} = \frac{2\pi}{b} = \frac{2\pi}{\frac{\pi}{4}} = 8.$$

REF: 010425b

16 ANS: 1

$$\frac{2\pi}{b} = 4\pi$$

$$b = \frac{1}{2}$$

REF: 011425a2

17 ANS:

period is $\frac{2}{3}$. The wheel rotates once every $\frac{2}{3}$ second.

REF: 061728aii