

## QUIZ / How are signals sent?

NAME

DATE

CLASS PERIOD

Put a check  in the  next to the correct answer.

1. A radio control transmitter is using a crystal that has a resonant frequency of 75.49 megahertz. A receiver has a crystal with a resonant frequency of 79.41 megahertz. The radio control transmitter frequency is close enough to activate the receiver.
  - True
  - False
2. Resonance only occurs in electronic circuits.
  - True
  - False
3. The radio control transmitter signal is transmitted:
  - only to the left of the remote control operator
  - only to the right of the remote control operator
  - only in an axial direction along the antenna length
  - only in a radial direction along the antenna length
  - none of the above
4. A fresh battery is critical to the radio control transmitter and Vex robotics system when conducting experimental investigations.
  - True
  - False
5. The size and shape of the Vex radio control transmitter crystal and the Vex receiver crystal are:
  - equal
  - the receiver crystal is larger than the transmitter crystal
  - the receiver crystal is smaller than the transmitter crystal
  - none of the above
6. When using the radio control transmitter to run a Vex robot, the following items are important:
  - antenna position
  - distance to the receiver
  - battery power in the radio control transmitter
  - all of the above are important
  - none of the above are important
7. The time period for a 75.93 MHz crystal is: (you must use a calculator to answer)
  - 7.593 microseconds
  - 75.93 nanoseconds
  - 13.17 nanoseconds
  - 1.317 nanoseconds
  - 131.7 microseconds

$$T = \frac{1}{f}$$

$$f = \frac{1}{T}$$

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8. The frequency for a crystal having a time period of 2.5 microseconds is:
- 250 megahertz
  - 25 kilohertz
  - 4 megahertz
  - 400 kilohertz
  - 4 gigahertz
9. The difference between a 75.41 megahertz crystal and a 75.49 megahertz crystal is:
- so small it is meaningless
  - 0.08 megahertz
  - 8 kilohertz
  - 0.08 megahertz, but this difference is meaningless
  - 8 kilohertz, but this difference is meaningless
10. The time period difference between a 75.89 megahertz crystal and a 75.49 megahertz crystal is:
- so small it is meaningless
  - 12.5 megahertz
  - 0.4 nanoseconds
  - 17.4 nanoseconds
  - .069 nanoseconds
11. Which of the materials listed below impedes the radio control transmitter signal the most?
- Wood
  - Paper
  - Sheet metal
12. Which of the materials listed below impedes the radio control transmitter signal the least?
- Wood
  - Paper
  - Sheet metal
13. What is the relationship between transmission strength and radio control transmitter antenna height?
- As antenna height increases, signal strength decreases
  - As antenna height increases, signal strength increases
  - As antenna height decreases, signal strength increases
  - As antenna height decreases or increases, signal strength remains constant

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14. The period of the sine wave in Figure 1 is:

- 0.5 x Pi
- Pi
- 1.5 x Pi
- 2 x Pi
- 3 x Pi

15. The frequency of the sine wave in Figure 1 is:

- 0.63662
- 0.31831
- 0.212207
- 0.159155
- 0.106103

16. Systematic error:

- is a factor in the experiment that throws off the data in the same way
- is a factor that constantly changes and affects your results
- may be caused by sloppy error measurements and starting points
- is completely random

17. Give one reason why scientists run multiple trials of an experiment.

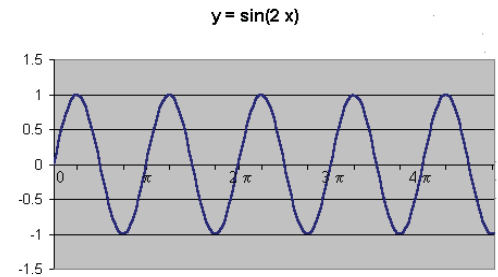


Figure 1