

DO NOW

Find the number of significant digits, accuracy and precision for: 305.6 in

Significant digits: 4
accuracy: 4 digits
precision: tenths

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1.8 Greatest Possible Error

Greatest possible error - $\frac{1}{2}$ of the precision
or
 $\frac{1}{2}$ of the unit of measure

For example: The length of a candy bar is 6 inches, to the nearest inch.

What is the precision (or unit of measure)?

1 inch

What is the greatest possible error?

$$\frac{1}{2}(1 \text{ inch}) = 0.5 \text{ inches}$$

What is the interval of measure?

$$6 \pm 0.5 \text{ inches}$$

*So somewhere between 5.5 and 6.5

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In the examples, find the unit of measure (precision), the greatest possible error, and the interval of measure.

2. The given measure is 3.7 feet.
precision: 0.1 foot
greatest possible error: $\frac{1}{2}(0.1 \text{ ft}) = 0.05 \text{ ft}$
interval: $3.7 \pm 0.05 \text{ ft}$
(between 3.65 and 3.75 ft)
3. The given measure is 2.43 meters.
precision: 0.01 m
greatest possible error: $\frac{1}{2}(0.01 \text{ m}) = 0.005 \text{ m}$
interval: $2.43 \pm 0.005 \text{ m}$
(between 2.425 and 2.435 m)
4. The given measure is 4,516 miles.
precision: 1 mile
greatest possible error: $\frac{1}{2}(1 \text{ mile}) = 0.5 \text{ miles}$
interval: $4,516 \pm 0.5 \text{ miles}$
(between 4,515.5 and 4,516.5 miles)

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5. If the precision of a measurement is 1 gallon, what is the greatest possible error for this measure?

$$\frac{1}{2}(1 \text{ gallon}) = 0.5 \text{ gallons}$$

6. If the precision of a measurement is 5 inches, what is the greatest possible error for this measure?

$$\frac{1}{2}(5 \text{ inches}) = 2.5 \text{ inches}$$

7. If the greatest possible error of a measurement is $\frac{1}{4}$ cm, what is the actual precision of this measurement?

$$2\left(\frac{1}{4}\right) = \frac{1}{2} \text{ cm}$$

If given greatest possible error
→ double for precision.

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HOMEWORK

Worksheet - HW 1.8 Greatest Possible Error

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