Basics of Tolerance 120

PRACTICE:

1. We want to install a fastener on an object that has been manufactured, and we want the latch to fit snuggly in the hole without have to force the fastener into place. In order to ensure the latch is positioned properly on the object, companies will use positional tolerance. A positional tolerance defines:

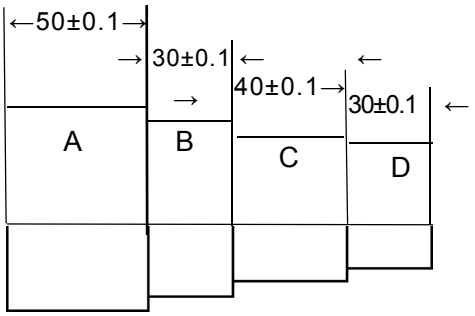
   a. A zone within which the center, axis, or center plane of a feature of size is permitted to vary from a true position.

   b. Desired position that may not be violated.

   c. A and B

   d. None of the above

2. Each section of the following telescoping pole must readily slide into the larger section. Using the following diagram, complete the table regarding the size and tolerance of each section of the pole.



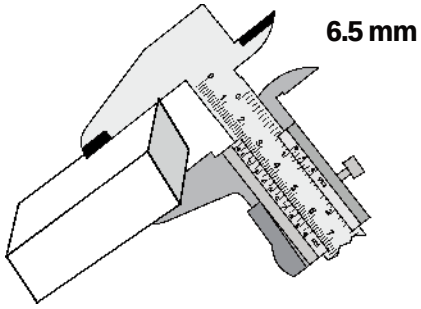
Box	Desired Values	Tolerance	Minimum Tolerance	Maximum Tolerance
A				
B				
C				
D				

3. Parts specification requirements are often identified on a specification sheet. Use the following table to answer questions a–d regarding the required measurements of the steel block.

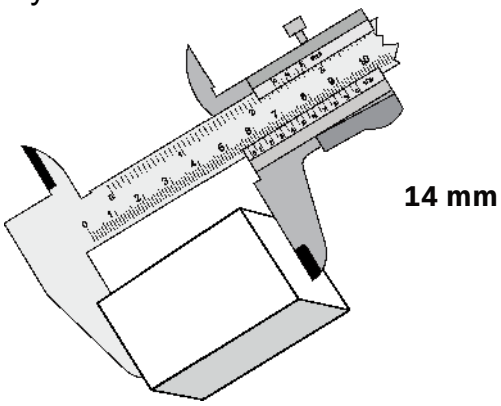
Inspection Specification Sheet		
Characteristic	**Specification**	**Measurement Tool**
Weight	280-320 grams	Scale
Thickness	5.5 mm ± 0.5 mm	Calipers
Splits	No splits allowed	Visual Inspection
Length	14.5 mm ± 0.5 mm	Calipers
Width	10 mm ± 1.5 mm	Calipers
Date Code	Present and correct	Visual

Decide whether each part pictured below meets the customer specifications in the chart by reading the caliper or scale measurements. Circle YES or NO.

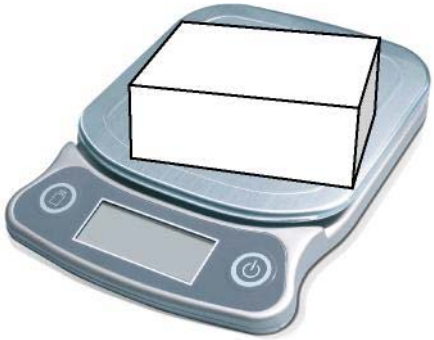
a. Yes or No. Discuss your answer:



b. Yes or No. Discuss your answer:



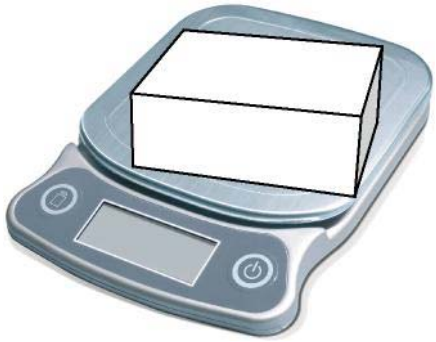
c. Yes or No. Discuss your answer:



Weight = 0.5 kg

Note: kilogram is 1000 times as heavy as a gram

d. Yes or No. Discuss your answer:



Weight = 30 grams

Note: kilogram is 1000 times as heavy as a gram

Image Sources:
Telescoping Pole—Modified by S. Grudzinski using concepts presented by the following source: Braithwaite, A. (2011). Geometrical Tolerance. Retrieved from http://www.webpages.uidaho.edu/mindworks/machine_shop/general_shop_info/geometrical_tolerancing.ppt

Vernier Calipers—Modified by S. Grudzinski using image overlays from Mitutoyo. (n.d.). Vernier Calipers Series 520 – Standard Model. Retrieved from http://ecatalog.mitutoyo.com/Vernier-Calipers-Series-530-Standard-Model-C1401.aspx

Scale—Modified by S. Grudzinski based upon scale image from Gourmande (n.d.). Gourmande in the Kitchen. Retrieved from http:// gourmandeinthekitchen.com/2012/gift-ideas-under-fifty-dollars/

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