

Exploratory Design & Engineering Review

Exam Format: - 85 Questions (Multiple Choice / True False / Matching)

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Drafting Terminology

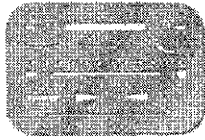
- A. Drafting boards are available in many different _____.
- B. What are the two types of straightedges available?
- C. Drafting paper is available in _____ basic sizes.
- D. _____ lead is used to draw light guidelines.
- E. Metal or plastic _____ have openings of various sizes and shapes. They are convenient for protecting lines which are not to be erased.
- F. What are the possible angles that can be drawn using the two standard triangles?
- G. _____ covers are used to protect the table top and provide a softer drawing surface.
- H. The size of drafting paper we typically use in this class is the _____ size.
- I. Drawing paper should be fastened to the board using _____.
- J. _____ triangles are used to draw non standard angles.
- K. _____ lead is used to draw dark object, border, or hidden lines.
- L. In drafting vertical lines are drawn with one of the two triangles held against the _____.

- *Identify the items below.*

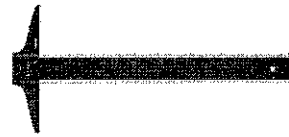
M. _____



N. _____



O. _____



P. _____



Q. _____



Lettering

- A. What is the correct way to write a drafting style "I"?
- B. What is the correct way to write a drafting style "J"?
- C. What is the correct way to write a drafting style "Y"?
- D. What is the correct way to write a drafting style "1"?
- E. What is the correct way to write a drafting style "2"?
- F. What is the correct way to write a drafting style "4"?
- G. What is the correct way to write a drafting style "8"?

Linework

A. What type of line is drawn below?



B. What type of line is drawn below?



C. What type of line is drawn below?



D. What type of line is drawn below?

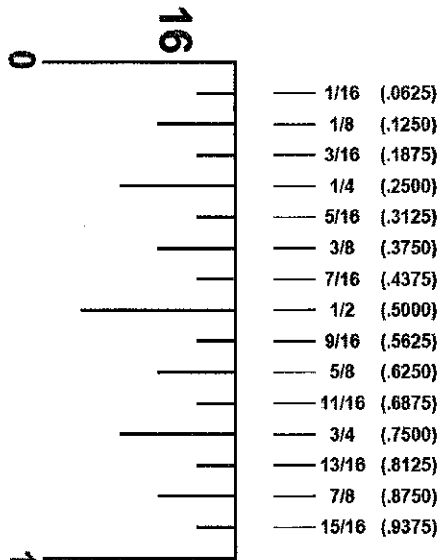


E. What type of line is drawn below?




Measurement

Use a ruler and the "Big Inch" to measure the following line segments.



A. 

B. 

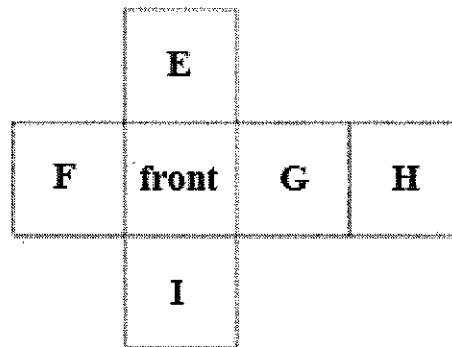
C. 

D. 

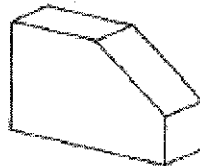
E. 

Multiview

- A. A cube will require you to draw how many views?
 - B. A sphere will require you to draw how many views?
 - C. A dice will require you to draw how many views?
 - D. What are the three most commonly drawn views?
- *Identify the different views below.*



- *Use the picture below to answer questions J, K, and L.*

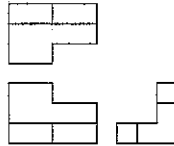


- J. What does the front view of the object above look like?
- K. What does the top view of the object above look like?
- L. What does the right side view of the object above look like?

Isometric

- A. What kind of a drawing is a method that enables three surfaces of an object to be seen in one view?
- B. Are isometric drawings a realistic view of the object?
- C. Do isometric drawings use hidden lines throughout the drawing?
- D. The most common views used in an isometric drawing are _____.
- E. The only angles used when creating the 3D box in and isometric drawing are the _____ angles.

- Use the picture below to answer question F.



- F. What does the isometric view of the object above look like?

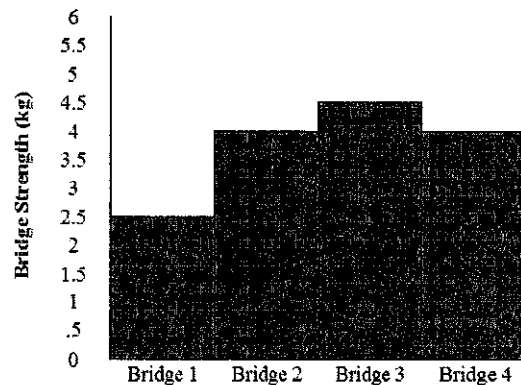
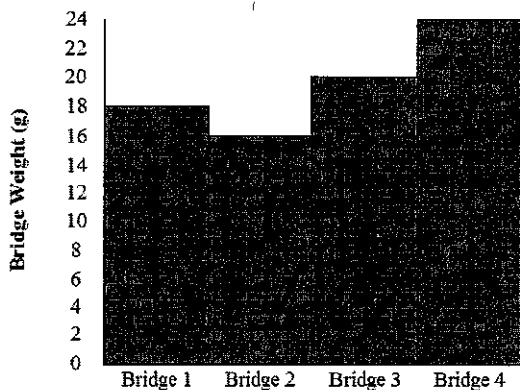
Toothpick / Balsa Bridge

- Use the formulas below to answer questions A, B, C, and D.

Force = Mass x Acceleration
Force is measured in Newtons (N)
Mass is measured in kilograms (kg)
Acceleration is measured in meters per second squared (m/s²)
Acceleration due to gravity = 9.8m/s²
1000 grams (g) = 1 kilogram (kg)

- A. A bridge can hold 2,500g before breaking. What is the amount of kilograms the bridge can hold before it breaks?
 - B. A bridge can hold 485,000g before breaking. What is the amount of kilograms the bridge can hold before it breaks?
 - C. A bridge can hold 2,150g before breaking. What is the amount of force the bridge can take before it breaks?
 - D. A bridge can hold 750g before breaking. What is the amount of force the bridge can take before it breaks?
- Use the formulas and charts below to answer questions E, F, and G.

Strength / Weight = Strength / Weight Ratio
Strength is measured in kilograms (kg)
Weight is measured in grams (g)
1000 grams (g) = 1 kilogram (kg)



- E. Which bridge weighed the second most?
- F. Which bridge had the second highest strength holding the most weight?
- G. What was the strength / weight ratio of Bridge 1?

Egg Crash Vehicle

- Use the formulas below to answer questions A, and B.

$$\text{Acceleration (m/s/s)} = \text{Distance (m)} / \text{Time (s)} / \text{Time (s)}$$

$$\text{Force (N)} = \text{Acceleration (m/s/s)} \times \text{Mass (kg)}$$

Distance is measured in meters (m)

Time is measured in seconds (s)

Force is measured in Newtons (N)

Mass is measured in kilograms (kg)

- A. If vehicle A traveled a distance of 2.5m in 1s and had a mass of 650kg, what would the force of vehicle A be measured at?
- B. If vehicle B traveled a distance of 15m in 6s and had a mass of 4600kg, what would the force of vehicle B be measured at?

Exploratory Design & Engineering Review Answer Key

Drafting Terminology

- A. Sizes
- B. Parallel Edge & T-Square
- C. Five
- D. 4H
- E. Erasing Shield
- F. 15, 30, 45, 60, 75, & 90
- G. Vinyl
- H. A
- I. Drafting Tape
- J. Adjustable
- K. HB
- L. Parallel Edge
- M. Triangle
- N. Erasing Shield
- O. T-Square
- P. Scale
- Q. Brush

Lettering

- A. I
- B. J
- C. Y
- D. I
- E. 2
- F. 4
- G. 8

Linework

- A. Guide
- B. Hidden
- C. Border
- D. Object
- E. Center

Measurement

- A. $1\frac{3}{8}$ "
- B. 2"
- C. $3\frac{5}{8}$ "
- D. $1\frac{3}{4}$ "
- E. $\frac{7}{8}$ "

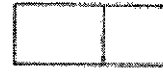
Multiview

- A. One
- B. One
- C. Six
- D. Front, Top, & Right Side
- E. Top
- F. Left Side
- G. Right Side
- H. Rear

I. Bottom



J.



K.



L.

Isometric

- A. Isometric
- B. Yes
- C. No
- D. Front, Top, & Right Side
- E. 30 & 90



F.

Bridge

- A. 2.5kg
- B. 485kg
- C. 21.07N
- D. 7.35N
- E. Bridge 3
- F. Bridge 2 & 4
- G. 138.8

Egg Crash Vehicle

- A. 1625N
- B. 1916.6N