

## 2.7) Problem Statement:

what are SG, Y, and I for mercury? State your answers in SI units and traditional units.

SKETCH: N/A

KNOWN:

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SG = Specific Gravity

Y = specific weight

P= density

UNKNOWN:

SG, 8, 2

SOLUTION:

From Table A.4

SI units:

SG = 13.55

Y=133,000 N/m3

P= 13,550 kg/m3

Traditional units:

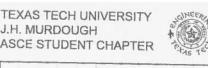
SG = 13.55

P=13,550 kg/m3 \* 1.94 slug/ft3 = 24.3 slug/ft3

8=133,000 N/m3 \* 0.2248 lbf \* 1m3 = 846.98 lbf

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## 2.13) Problem Statement:

Calculate the pressure increase that must be applied to water to reduce its volume by 2%.

UKnown:

AP

known:

At: + by ar.

sketch: N/A

Governing Egns.

E= - AP +

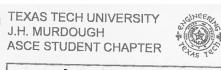
SOLUTION:

E = 2.2x10 Pa from Table A.5

= 2.2 × 10 Pa (0.02) = 4.4 × 10 Pa

ΔP= 44 MPa

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| atement: |
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|          |

Sliding plate viscometer is used to measure fluid Viscosity.

KNOWN:

A = 50 x 100 mm

Dy=1mm

u=10m/s

F = 3N

UNKNOWN:

Viscosity of the Fluid.

Governing Egns.

Y = Force Area

U= 4 (du)

SOLUTION:

50 mm x 100 mm

= 600 N/m2

finding viscosity:

$$\mathcal{U} = \frac{\mathcal{C}_{du}}{\frac{du}{dy}} = \frac{(600 \text{ N/m}^2)}{[10^{\text{m}/s}]/[1 \text{ mm}]} \times \frac{1}{1000 \text{ mm}}$$

$$\mathcal{U} = \frac{(400 \text{ N/m}^2)}{(400 \text{ N/m}^2)} \times \frac{1}{1000 \text{ mm}}$$

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