QZ wk-11 | 04.02.2019 | Member Sizing
For each of the following, circle the most correct answer.

1. (True or False) Buckling is a concern when members are in axial tension.

2. Allowable stress for steel tension members is set to 0.6 F_y because:
   a. The yield strength of steel is 0.6 of its ultimate strength.
   b. This ensures that we stay within the elastic behavior zone.
   c. We do not know the ultimate strength of steel.
   d. The allowable stress is greater than the yield stress for steel.

3. If the tensile force in a cable is 67.824 k and the allowable tension stress F_t is 21.6 ksi, the required diameter of this cable is: Remember f_t = P/A and that A req = P/F_t
   a. 1 in
   b. 2 in
   c. 3 in
   d. 4 in

diameter!

4. (True or False) From today’s reading …. arranging elements into a triangular configuration results in a stable shape.

5. A steel beam experiences a maximum bending moment of 540 k-ft. If the beam is made of A36 steel, what is the required Section Modulus? Remember that f_b = M/S and S req = M/F_b (units for S are in^3)
   a. 100 in^3
   b. 200 in^3
   c. 300 in^3
   d. 400 in^3

6. (True or False) Steel W-sections are stronger in bending about their x-x axis than their y-y axis

7. .kl/r is the slenderness ratio.
   (True or False): k stands for the column’s boundary conditions
   (True or False): l stands for the height of the building
   (True or False): r stands for the radius of gyration

8. If we assumed a radius of gyration r = 2.0” but the calculations directed us to r = 3.0”, this new number is
   a. Better for column stability
   b. Worse for column stability
   c. The same for column stability
   d. Has nothing to do with column stability
   e. All of the above
   f. None of the above