1. Which of the following findings is consistent with severe aortic stenosis?
   a. Mean aortic valve gradient 30 mmHg.
   b. Aortic valve area 1.2 cm$^2$.
   c. LVOT/Aortic valve TVI index 0.23.
   d. Aortic valve peak velocity 2 m/sec.

2. Which of the following measurements does not affect the calculation of aortic valve area?
   a. LVOT area.
   b. LVOT TVI.
   c. Aortic valve TVI.
   d. Left ventricular stroke volume.
   e. Mitral valve TVI.

3. Using CW Doppler at an angle of insonation >15 degrees parallel to aortic valve flow will most likely result in:
   a. Overestimation of aortic valve velocity.
   b. Overestimation of aortic valve area.
   c. Overestimation of AV mean gradient.
   d. Underestimation of LVOT velocity.

4. The most common cause of aortic stenosis is:
   a. Degenerative calcification.
   b. Bicuspid aortic valve disease.
   c. Rheumatic valve disease.
   d. Radiation induced valve disease.
   e. Aortic dissection.

5. When measuring the LVOT diameter which of the following statements is true?
   a. The measurement should be performed on a diastolic still frame.
   b. The diameter is measured using the leading edge to leading edge technique.
   c. The LVOT diameter cannot be reliably measured using TTE.
   d. The LVOT measurement is squared and then multiplied by 0.785 to derive LVOT cross sectional area.
   e. The measurement is performed 1 cm below the aortic valve to ensure the area of flow convergence is avoided.

6. Which of the following parameters is consistent with severe aortic regurgitation?
   a. Regurgitant volume by PISA of 40cc.
   b. Regurgitant volume by continuity equation of 50cc.
   c. ERO of 0.4 cm$^2$.
   d. Descending thoracic aorta regurgitant TVI of 10cc.
   e. Vena contracta width of 5mm.

7. The most common cause of aortic regurgitation is due to:
   a. Degenerative calcification.
   b. Bicuspid aortic valve disease.
   c. Rheumatic valve disease.
   d. Radiation induced valve disease.
   e. Aortic dissection.
8. Quantitative assessment of aortic regurgitation can be done using:
   a. Color flow jet area.
   b. PW Doppler in the descending thoracic aorta.
   c. Proximal isovelocity surface area method from a parasternal long axis view.
   d. CW Doppler aortic regurgitation jet density.
   e. CW Doppler aortic regurgitation jet deceleration rate (pressure half time).

9. The peak aortic gradient is calculated using the:
   a. Peak aortic velocity obtained by PW Doppler.
   b. Peak AV TVI.
   c. The modified Bernoulli equation.
   d. Peak LVOT velocity.
   e. Continuity equation.

10. Placing the PW sample volume in the area of flow convergence will most likely:
    a. Overestimate the aortic valve area.
    b. Underestimate the LVOT velocity.
    c. Underestimate the LVOT TVI.
    d. Have no effect on the calculated stroke volume.
    e. Overestimate the peak AV TVI.