RSPT 1050 – Module B: Practice Problems
Express compliance problems in mL/cm H_20 and L/cm H_20

1. Given a tidal volume of 400 mL and a pressure of 50 cm H_20, calculate the compliance.

$$C = \frac{\Delta V}{\Delta P} = \frac{400mL}{50cmH_2O} = \frac{0.4L}{50cmH_2O} = 0.008\ L/cmH_2O$$

2. Given a tidal volume of 300 mL and a pressure of 35 cm H_20, calculate the compliance.

$$C = \frac{\Delta V}{\Delta P} = \frac{300mL}{35cmH_2O} = \frac{0.3L}{35cmH_2O} = 0.009\ L/cmH_2O$$

3. Given a tidal volume of 800 mL and a pressure of 10 cm H_20, calculate the compliance.

$$C = \frac{\Delta V}{\Delta P} = \frac{800mL}{10cmH_2O} = \frac{0.8L}{10cmH_2O} = 0.080\ L/cmH_2O$$

4. Given a tidal volume of 600 mL and a pressure of 30 cm H_20, calculate the compliance.

$$C = \frac{\Delta V}{\Delta P} = \frac{600mL}{30cmH_2O} = \frac{0.6L}{30cmH_2O} = 0.020\ L/cmH_2O$$

5. Given a tidal volume of 700 mL and a pressure of 60 cm H_20, calculate the compliance.

$$C = \frac{\Delta V}{\Delta P} = \frac{700mL}{60cmH_2O} = \frac{0.7L}{60cmH_2O} = 0.012\ L/cmH_2O$$

6. Given an inspiratory flowrate of 500mL/sec, and an inspiratory time of 0.6 seconds, calculate the tidal volume.

$$500\ mL/\text{sec} \times 0.6\ \text{sec} = 300mL$$

7. Given an inspiratory flowrate of 0.1L/sec, and an inspiratory time of 0.6 seconds, calculate the tidal volume.

$$0.1\ L/\text{sec} \times 0.6\ \text{sec} = 0.06L = 60mL$$

8. Given an inspiratory flowrate of 300mL/sec, and an inspiratory time of 0.8 seconds, calculate the tidal volume.

$$300\ mL/\text{sec} \times 0.8\ \text{sec} = 240mL$$

9. Given an inspiratory flowrate of 400mL/sec, and an inspiratory time of 1.0 second, calculate the tidal volume.

$$400\,mL/\text{sec} \times 1.0\,\text{sec} = 400mL$$

10. Given an inspiratory flowrate of 150mL/sec, and an inspiratory time of 3 seconds, calculate the tidal volume.

$$150\,mL/\text{sec} \times 3.0\,\text{sec} = 450mL$$

11. Given a flowrate of 1.2 L/sec and a pressure of 40 cm H_20, calculate the airway resistance.

$$R_{aw} = \frac{\Delta P}{\dot{V}} = \frac{40cmH_2O}{1.2L/\text{sec}} = 33.3\,cmH_2O/L/\text{sec}$$

12. Given a flowrate of 0.8 L/sec and a pressure of 50 cm H_20, calculate the airway resistance.

$$R_{aw} = \frac{\Delta P}{\dot{V}} = \frac{50cmH_2O}{0.8L/\text{sec}} = 62.5\,cmH_2O/L/\text{sec}$$

13. Given a flowrate of 1.3 L/sec and a pressure of 30 cm H_20, calculate the airway resistance.

$$R_{aw} = \frac{\Delta P}{\dot{V}} = \frac{30cmH_2O}{1.3L/\text{sec}} = 23.1\,cmH_2O/L/\text{sec}$$

14. Given a flowrate of 0.6 L/sec and a pressure of 25 cm H_20, calculate the airway resistance.

$$R_{aw} = \frac{\Delta P}{\dot{V}} = \frac{25cmH_2O}{0.6L/\text{sec}} = 41.\overline{6}\,cmH_2O/L/\text{sec}$$

15. Given a flowrate of 1.2 L/sec and a pressure of 15 cm H_20, calculate the airway resistance

$$R_{aw} = \frac{\Delta P}{\dot{V}} = \frac{15cmH_2O}{1.2L/\text{sec}} = 12.5\,cmH_2O/L/\text{sec}$$