

## 01. Selected Answers For Kinematics

### Selected Answers for ModelSpiral Physics: Mechanics

#### Kinematics

- 41.  $r_2 = 1.4 \text{ m}$
- 42.  $t_2 = 1.45 \text{ m}$
- 43.  $t_3 = 3.4 \text{ s}$
- 44.  $t_3 = 4.55 \text{ s}$
- 45.  $r_3 = 36.6 \text{ m}$
- 46.  $r_4 = 2.0 \text{ km}$
- 47.  $t_4 = 370 \text{ ks}$
- 49.  $t_2 = 14.9 \text{ s}$
- 50.  $t_2 = 7.8 \text{ s}$
- 51.  $t_3 = 2.87 \text{ s}$

#### Dynamics

- 80.  $F_{\text{rope}} = 420 \text{ N}$
- 81.  $F_{\text{cushion}} = 1.91 \text{ kN}$
- 83.  $F_{\text{bottom cable}} = 11.4 \text{ N}$
- 84.  $F_{\text{cushion}} = 2.83 \text{ kN}$
- 85.  $F_{\text{ground}} = 43.7 \text{ kN}$
- 86.  $r_3 = 63.5 \text{ m}$
- 87.  $r_3 = 1.55 \text{ km}$
- 89.  $m_{\text{block}} = 240 \text{ kg}$
- 90.  $m_{\text{block}} = 26 \text{ kg}$
- 91.  $F_{\text{rope}} = 500 \text{ N}$
- 92.  $F_{\text{rope}} = 490 \text{ N}$

#### Conservation Laws

- 122. a.  $F_{\text{scale}} = 755 \text{ N}$       b.  $F_{\text{scale}} = 780 \text{ N}$
- 123. a.  $v = 116 \text{ m/s}$       b.  $t = 26.8 \text{ s}$
- 124. a.  $v = 12.5 \text{ m/s}$       b.  $F_{\text{ground}} = 43.7 \text{ kN}$
- 125.  $t_2 = 0.89 \text{ s}$        $r_2 = 1.78 \text{ m}$
- 127.  $m_{\text{student}} = 94 \text{ kg}$
- 128.  $v_2 = 6.0 \text{ m/s}$
- 129.  $v_2 = 1.5 \text{ m/s}$
- 130.  $v_{2 \text{ ship}} = 24.3 \text{ m/s}$
- 131.  $v_{\text{probe}} = 667 \text{ m/s}$
- 132.  $v_{2 \text{ platform}} = 0.28 \text{ m/s}$
- 133.  $v_{2 \text{ platform}} = 0.06 \text{ m/s}$
- 134.  $v_{2 \text{ balloon}} = 6.3 \text{ m/s}$

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