1. On the Moon ($g = 1.62$ m/s^2), an object is dropped from rest. Find its speed after 2 s.

   _____ m/s

2. Find Bolt's average speed in the 2009 final, to 3 significant figures.

   _____ m/s

3. What does the area under a velocity–time graph give?

   ☐ Velocity

   ☐ Force

   ☐ Displacement

   ☐ Acceleration

4. $v = 3t^2 + 2$ and $s = 5$ when $t = 0$. Find s.

   ☐ $3t^3 + 2t + 5$

   ☐ $6t + 5$

   ☐ $t^3 + 2t + 5$

   ☐ $t^3 + 2t$

5. You know u, a and s, and want v. Which formula?

   ☐ $s = ut + \frac{1}{2}at^2$

   ☐ $v^2 = u^2 + 2as$

   ☐ $v = u + at$

   ☐ $s = \frac{1}{2}(u + v)t$

6. $v = 4 - t$ m/s. Find the displacement from $t = 0$ to $t = 6$.

   _____ m

7. A car at 20 m/s brakes at 4 m/s^2 to rest. Find the stopping distance.

   _____ m

8. For the same $v = 4 - t$, find the distance travelled from $t = 0$ to $t = 6$.

   _____ m

9. Taking upwards as positive, a stone that lands 5 m below its launch point has $s = 5$.

   ☐ True ☐ False

exercises.lol exercises.com.cn

☐ True ☐ False

1. **3.24 m/s**

   $v = 0 + 1.62 \times 2$.

2. **10.4 m/s**

   $100 \div 9.58 = 10.44$.

3. **Displacement**

   Velocity × time.

4. $t^3 + 2t + 5$

   Integrate and use $s(0) = 5$.

5. $v^2 = u^2 + 2as$

   It has no t.

6. **6 m**

   $[4t - \frac{t^2}{2}]_0^6 = 24 - 18$.

7. **50 m**

   $0 = 400 - 8s$.

8. **10 m**

   0 to 4: 8 m forwards; 4 to 6: 2 m back. $8 + 2 = 10$.

9. **False**

   It is below the start, so $s = -5$.

10. **False**

    It gives displacement; split where $v = 0$ for distance.

exercises.lol exercises.com.cn