# Answers Sheet

## Speed and Density

**1.**

$$\text{Speed} = \frac{distance}{Time}$$

$$= 300 / 30$$

**Speed = 10m/s**

---

**2.**

$$= 140 / 4$$

**Pressure = 35 N/m$^2$**

---

**3.**

$$\text{Density} = \frac{mass}{volume}$$

$$= 450 / 30$$

**Density = 15 g/cm$^3$**

---

**4.**

$$\text{Volume} = \frac{mass}{density}$$

$$= 85 / 2.5$$
$$= 170 / 5$$
**= 85cm$^3$**

---

**5.**

$$\text{Speed} = \frac{distance}{Time}$$

$$\text{Speed} = 340 / 4.25$$

**= 80 mph**

---

**6.**

Area = force / pressure
   = 64 / 24
   **= 2.67m$^2$**

---

**7.**

Mass = density × volume
   = 1.5 × 350
   **= 525g**

---

**8.**

Time = distance / speed
   = 93 / 27
   **= 3.4 hours**

---

**9.**

Zohaib distance = speed × time
   = 75 × 2.3
   = 172.5 miles
Shiraz Speed = distance / time
   = 172.5 / 2.583
   **= 66.7 miles/hour**

**b)**   If the distance was increased the speed would be higher.

   (If the distance decreased the speed would be lower)

---

**10.**

First 267 miles

Time = distance/ speed

Time = 267 / 80

   = 3.33 hours

3 hours 20 mints (approx.)

So,

3 hours 20 mints + 5 hours 40 mints = 9 hours

Average speed = total distance / total time

   = 400 / 9

   **= 44.4 mph**

---

**11.**

Speed = distance / time

   = 2.1 / 12.583

   = 0.1668… miles/ min

Time = distance / speed

   = 6 / 0.1668

   = 35.97

   **35 mints 97 secs**

**b)**     It would take longer to run 6 miles

      (The answer would be higher)

---

**12.**

Liquid A: Mass = density × volume

      = 1.3 × 180

      = 234g

Liquid C: Volume = mass / density

      = 395 / 1.25

      = 316cm$^3$

Liquid B volume = Liquid C Volume – Liquid A Volume

      = 316 – 180 = 136 cm$^3$

Liquid B Mass = liquid C Mass – Liquid A Mass

      = 395 – 234

      = 161 g

Liquid B density = mass / volume

      = 161 / 136

      **= 1.18 g/ cm$^3$**

**13.**

Liquid A: Mass = density × volume

= 0.7 × 200

= 140g

Liquid B: Mass = 1.1 × 300

= 330g

Liquid C: Density = total mass / total volume

= 140 + 330 / 200 + 300

= 470 / 500

**= 0.94 g / ml**