Year 9 Science: Asteroids, comets, meteors and scale models of the Solar System

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Saturn is 9.5 AU from the Sun. How far is that in kilometres?

2. Which unit would you use for each: the width of Mars, the distance from the Sun to Uranus, the distance to the Southern Cross stars? Give a reason for one of them.

3. A rock lands in a paddock in Canterbury after streaking across the sky. Name the streak and name the rock.

4. In the beach-ball model, where 1 AU is 32 m, how far from the ball does Mars (1.52 AU) go?

5. A comet's tail points to the left of the comet in a photo. Which way is the Sun, and why?

Fix the mistake

6. Correct this statement: "A meteor and a meteorite are the same thing."

7. Correct this statement: "A comet's tail trails behind it, showing where it has come from."

8. Correct this statement: "Jupiter is 5.2 AU away, so it is 5.2 × 150 = 780 km from the Sun."

9. Correct this statement: "The asteroid belt is so packed with rocks that spacecraft have to steer around them."

Answer key (for parents and tutors)

1. Saturn is 9.5 AU from the Sun. How far is that in kilometres?
   9.5 × 150 million km = 1,425 million km, about 1.4 billion km.
2. Which unit would you use for each: the width of Mars, the distance from the Sun to Uranus, the distance to the Southern Cross stars? Give a reason for one of them.
   Kilometres for the width of Mars, AU for the Sun to Uranus, light-years for the Southern Cross. Each keeps the numbers small: 19.2 AU is easier to use than 2.9 billion km.
3. A rock lands in a paddock in Canterbury after streaking across the sky. Name the streak and name the rock.
   The streak is a meteor; the rock on the ground is a meteorite.
4. In the beach-ball model, where 1 AU is 32 m, how far from the ball does Mars (1.52 AU) go?
   1.52 × 32 m = about 49 m.
5. A comet's tail points to the left of the comet in a photo. Which way is the Sun, and why?
   To the right. The tail is pushed away from the Sun by sunlight and the solar wind, so it always points away from it.
6. Correct this statement: "A meteor and a meteorite are the same thing."
   A meteor is the glowing streak in the air, and a meteorite is the piece of rock that survives and lands on the ground.
7. Correct this statement: "A comet's tail trails behind it, showing where it has come from."
   The tail always points away from the Sun, pushed by sunlight and the solar wind, so a comet heading away from the Sun travels tail first.
8. Correct this statement: "Jupiter is 5.2 AU away, so it is 5.2 × 150 = 780 km from the Sun."
   1 AU is 150 million km, so the answer is 780 million km; dropping the million makes the distance a million times too small.
9. Correct this statement: "The asteroid belt is so packed with rocks that spacecraft have to steer around them."
   The belt is mostly empty space, with asteroids typically hundreds of thousands of kilometres apart, so probes fly straight through.