Name_____ Date_____

What's the Overlap **Answers**

1. a) Cylinder: S.A. = $2\pi rh + 2\pi r^2 = 2\pi(10)(20) + 2\pi(10)^2 \approx 1885$
   S.A. is about 1885 cm².

   b) Cube: S.A. = $6s^2 = (6)(20)(20) = 2400$
   S.A. is 2400 cm².

   c) An area equal to the size of one circular face from both objects.
   Area circle = πr^2; $2\pi(10)^2 \approx 628$
   Overlap: about 628 cm²

   d) 1885 cm² + 2400 cm² – 628 cm² = 3657 cm²
   S.A. is about 3657 cm².

2. a) Triangular prism: To determine the area of the triangular faces, I need to find the
   missing side length. I can use the Pythagorean Theorem. $c^2 = 20^2 + 10^2$, $c \approx 22.4$.
   $2 \times \left[\frac{1}{2}(20)(20)\right] + (20)(60) + 2(60)(22.4) = 4288$
   S.A. is 4288 cm².
   b) Square prism: $(2)(20)(20) + (4)(20)(60) = 5600$
   S.A. is 5600 cm².

   c) The area of one long rectangular face from both prisms: $(2)(20)(60) = 2400$
   Overlap: 2400 cm²

   d) 4288 cm² + 5600 cm² – 2400 cm² = 7488 cm²
   S.A. is 7488 cm².

3. Note: If student observes that this prism and this cylinder have the same dimensions as
   in Q1 and Q2, they might give the answers without calculations.
   a) Triangular prism: $2 \times \left[\frac{1}{2}(20)(20)\right] + (20)(60) + 2(60)(22.4) = 4288$
   S.A. is 4288 cm².

   b) Cylinders (2): S.A. = $2(2\pi rh + 2\pi r^2) = 2[2\pi(10)(20) + 2\pi(10)^2] \approx 2(1885) = 3770$
   S.A. is about 3770 cm².

   c) Area of circle = πr^2, so area equal to 4 circular faces: $4\pi(10)^2 \approx 1256$
   Overlap: about 1256 cm²

   d) 4288 cm² + 3770 cm² – 1256 cm² = 6802 cm²
   S.A. is about 6802 cm².