

Measurement
Unit 3 Line Master 1d
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 cm^2 .
 b) Cube: $S.A. = 6s^2 = (6)(20)(20) = 2400$
S.A. is 2400 cm^2 .
 c) An area equal to the size of one circular face from both objects.
Area circle $= \pi r^2$; $2\pi(10)^2 \approx 628$
Overlap: about 628 cm^2
 d) $1885 \text{ cm}^2 + 2400 \text{ cm}^2 - 628 \text{ cm}^2 = 3657 \text{ cm}^2$
S.A. is about 3657 cm^2 .
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 cm^2 .
 b) Square prism: $(2)(20)(20) + (4)(20)(60) = 5600$
S.A. is 5600 cm^2 .
 c) The area of one long rectangular face from both prisms: $(2)(20)(60) = 2400$
Overlap: 2400 cm^2
 d) $4288 \text{ cm}^2 + 5600 \text{ cm}^2 - 2400 \text{ cm}^2 = 7488 \text{ cm}^2$
S.A. is 7488 cm^2 .
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 cm^2 .
 b) Cylinders (2): $S.A. = 2(2\pi rh + 2\pi r^2) = 2[2\pi(10)(20) + 2\pi(10)^2] \approx 2(1885) \approx 3770$
S.A. is about 3770 cm^2 .
 c) Area of circle $= \pi r^2$, so area equal to 4 circular faces: $4\pi(10)^2 \approx 1256$
Overlap: about 1256 cm^2
 d) $4288 \text{ cm}^2 + 3770 \text{ cm}^2 - 1256 \text{ cm}^2 = 6802 \text{ cm}^2$
S.A. is about 6802 cm^2 .