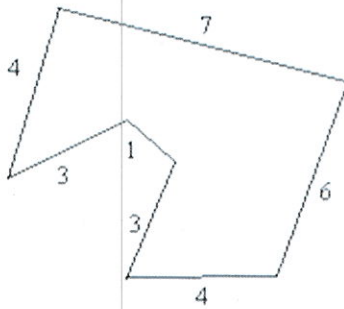
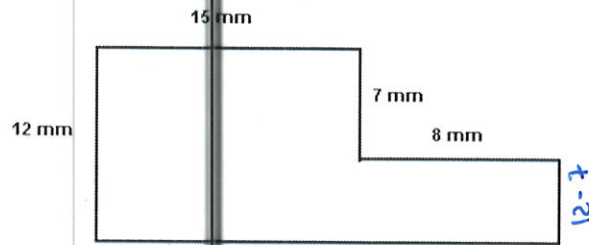


**Instructions:** Work problems on a separate sheet of paper and attach work to this page. You should show all work to receive full credit for problems. Checking your work with computer algebra systems is fine, but that doesn't count as "work" since you won't be able to use CAS programs on exams or quizzes. Sketch any graphs you obtain. Questions with compact answers can be recorded directly on this page. Graphs and longer answers that won't fit here, indicate which page of the work the answer can be found on and be sure to clearly indicate it on the attached pages.

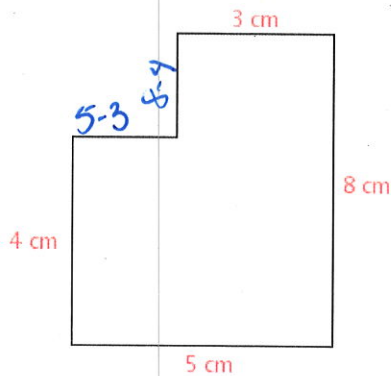
1. Find the perimeter of the following shapes.



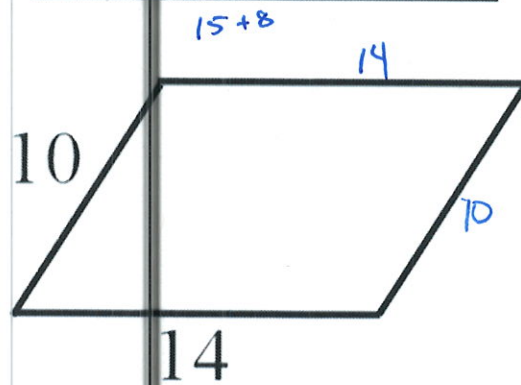
a.



c.

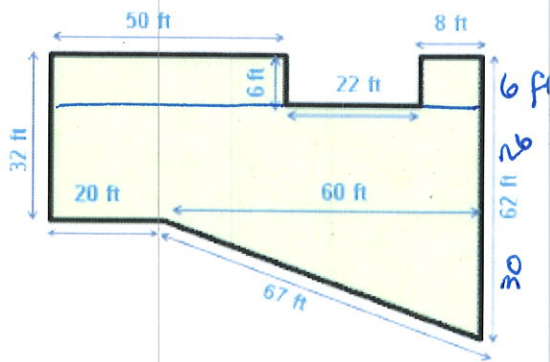


b.

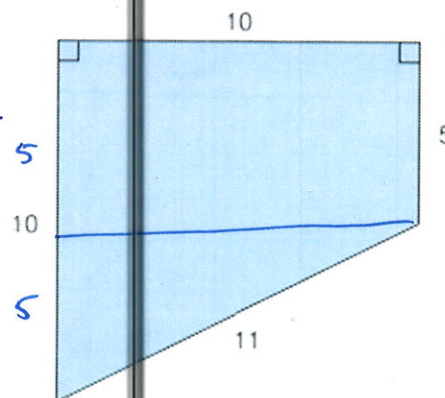


d.

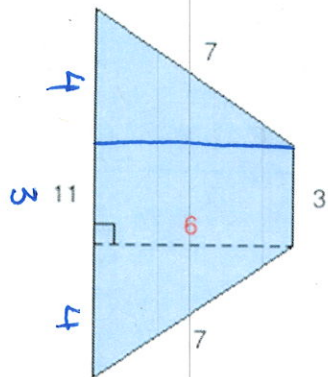
2. Find the area of the following regions.



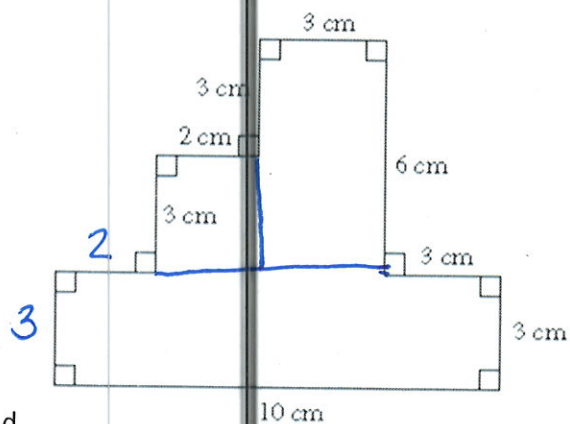
a.



c.

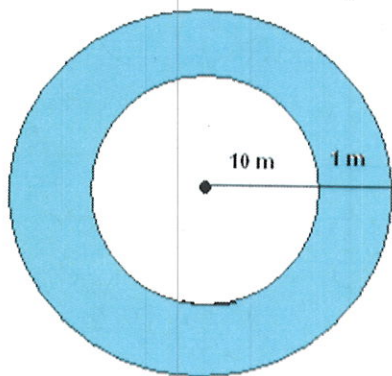


b.



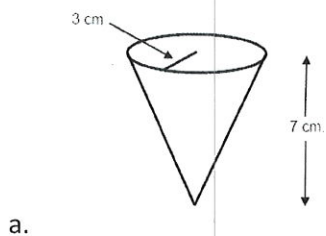
d.

3. Find the area of the shaded region.

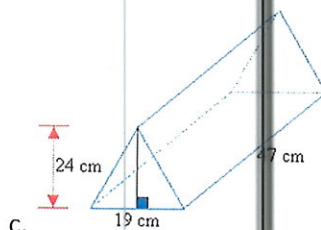


4. A ceiling measuring  $9 \times 15 \text{ ft}^2$  can be painted for \$60. How much would it cost to paint a ceiling  $18 \times 30 \text{ ft}^2$ .

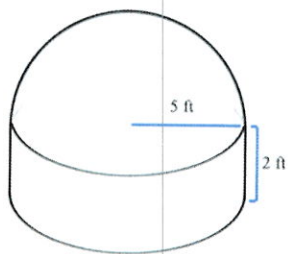
5. Find the volume of the given shapes.



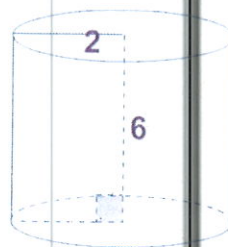
a.



c.



b.



d.

1a.  $4+7+6+4+3+1+3 = 28$

c.  $12+15+7+8+(8+15)+(12-7) = 70$

b.  $4+5+8+3+4+2 = 26$   
 $(8-4) (5-3)$

d.  $10+14+10+14 = 48$

2a.  $50 \times 6 + 8 \times 6 + 26 \times 80 + 60 \times 30 \times \frac{1}{2} = 3328$

c.  $10 \times 5 + \frac{1}{2}(5)(10) = 75$

b.  $4 \times 6 \times \frac{1}{2} + 4 \times 6 \times \frac{1}{2} + 6 \times 3 = 42$

or  $\frac{1}{2}(11+3) \cdot 6 = 42$

d.  $3 \times 10 + 2 \times 3 + 3 \times 6 = 54$

3.  $\pi(11)^2 - \pi(10)^2 = 121\pi - 100\pi = 21\pi$

4.  $\frac{9 \times 15}{60} = \frac{18 \times 30}{x} \Rightarrow 135x = 324,000$   
 $x = 240$

5. a.  $V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi (3)^2 \cdot 7 = 21\pi$

b.  $\frac{1}{2}(\frac{4}{3}\pi(5)^3) + \pi(5)^2 \cdot 2 = \frac{250}{3}\pi + 50\pi = \frac{400}{3}\pi$

c.  $\frac{1}{2}(24)(19)(47) = 10,716$

d.  $\pi(2)^2(6) = 24\pi$

6. a. reflection  
 b. translation

c. rotation  
 d. glide reflection