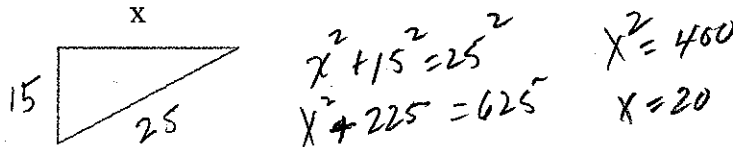


Part I. Short Answer (Two Points Each). Show how you calculate each answer in the space provided for that purpose. Place your answer on the appropriate line in the answer column. *Express each answer using appropriate units and where your answers are approximate express your approximation to the nearest tenth of a unit.* You may use 3.14 as an approximation for pi.

1. Consider the scale drawing of right triangle shown below. Calculate the length of the leg labeled "x" if the lengths of the hypotenuse and other leg are 15 cm and 25 cm respectively.



1. 20 cm

2. Determine the perimeter of the triangle pictured in #1 above.

$15 + 20 + 25 = 50$

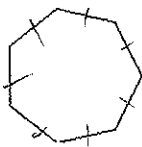
2. 50 cm

3. Determine the area of the triangle pictured in #1 above.

$\frac{1}{2}(20)(15) = 150$

3. 150 cm²

4. What is the exact angle measure of each interior angle of the regular polygon drawn below? (Assume the polygon is regular.)



$\frac{5(180)}{7} = \frac{900}{7}$ $7 \overline{) 900}$
 $\underline{7}$
 20
 $\underline{14}$
 60
 $50/4$

4. 128 $\frac{4}{7}$ °

5. What is the exact measure of each central angle in the polygon pictured in #4 above?

$\frac{360}{7} = 51 \frac{3}{7}$

5. 51 $\frac{3}{7}$ °

6. How many square centimeters are there in 1 square meter?



6. 10,000

7. How many square feet are there in one square yard?



7. 9

8. Which of the following is closest to the temperature of hot soup?

0°C 11°C 22°C 72°C 150°C About 160°F

8. 72°C

9. Which of the following is closest to the distance from Salisbury, MD to Ocean City, MD?

50m, 500 m, 5000 m, 1 km, 50 km, 500 km, 50cm, 500 cm

9. 50 km

10. Determine the circumference of a circle with radius 10 cm.

$C = 2\pi r \approx 2(3.14)10 \approx 62.8$

10. 62.8 cm

11. Determine the area of a circle with radius 10 cm.

$A = \pi r^2 \approx 3.14(10)^2 \approx 314$

11. 314 cm²

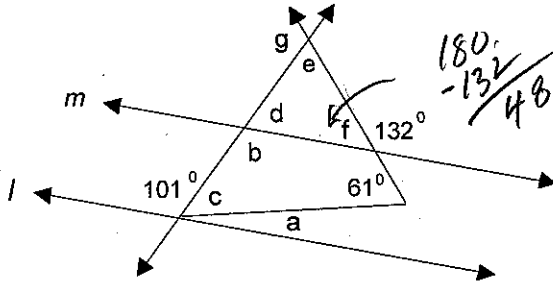
12. Will the figure below tessellate the plane? (yes or no)

12. Yes



v See #18 on page 596

Test items 13 and 14 refer to the figure below.



13. What is the measure of the angle identified by f.

13. 48°

14. What is the sum of the measures of the angles identified by d and e?

14. 132°

15. How many faces will a polyhedron possess if it has 12 edges and 7 vertices?

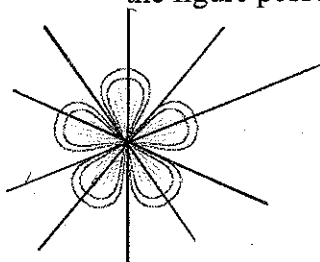
15. 7



$$\begin{aligned}
 F + V &= E + 2 \\
 F + 7 &= 12 + 2 \\
 F &= 7
 \end{aligned}$$

16. Consider the figure below. How many lines of symmetry does the figure possess?

16. 5

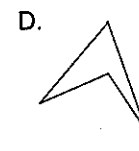
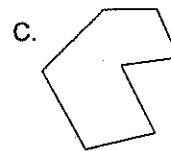
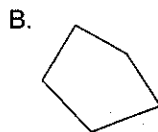
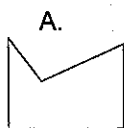


17. Consider the figure in exercise #16 above. How many rotation symmetries does it possess?

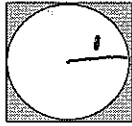
17. 5

18. Which, if any, of the following figures are convex?

18. B



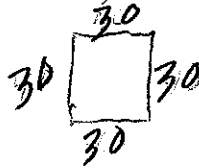
19. Find the area of the shaded region in the figure below. A circle has been inscribed in a square whose sides are of length 2 cm.



$$2^2 - \pi(1)^2 \approx 4 - 3.14 \approx 0.86$$

19. 0.86 cm²

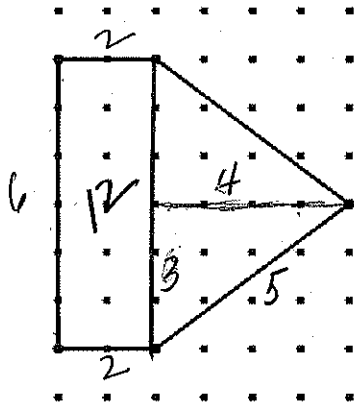
20. If the perimeter of a square is 120 cm, what is its area?



20. 900 cm²

Part II. Problems.

21. (5 points) Show how to find the exact area and the exact perimeter of the figure below. State your conclusions in complete sentences and express your answers using appropriate units. (Assume the horizontal and vertical distance between dots is 1 cm.)



$$A = (2 \times 6) + \frac{1}{2} \cdot 6 \cdot 4 \text{ cm}^2$$

$$\approx 12 + 12 \text{ cm}^2$$

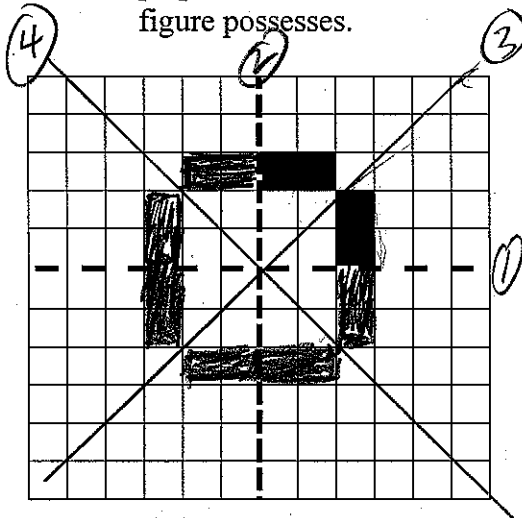
So, the area is 24 cm²

$$P = 6 + 2 + 2 + 5 + 5 \text{ cm}$$

$$= 20 \text{ cm}$$

The perimeter is 20 cm

21. (5 points) Complete the figure below so that it is symmetric about both of the two perpendicular dashed lines. Describe any rotation and line symmetries the resulting figure possesses.



There are 4 line symmetries as shown.

There are 4 rotational symmetries 90°, 180°, 270°, 360°