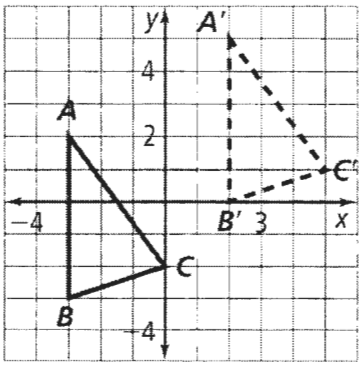
Name Answers Date

Chapter 9 & 10 – Final Review

Choose the correct letter.

1) In the diagram, $\triangle A'B'C'$ is an image of $\triangle ABC$. Which rule describes this translation?



(A) $(x, y) \rightarrow (x - 5, y - 3)$

(B) $(x, y) \rightarrow (x + 5, y + 3)$

(C) $(x, y) \rightarrow (x - 3, y - 5)$

(D) $(x, y) \rightarrow (x + 3, y + 5)$

2) The translation $(x, y) \rightarrow (x + 3, y - 7)$ maps $TUVW$ onto $T'U'V'W'$. What translation maps $T'U'V'W'$ onto $TUVW$?

(F) $(x, y) \rightarrow (x + 3, y - 7)$

(G) $(x, y) \rightarrow (x - 7, y + 3)$

(H) $(x, y) \rightarrow (x + 7, y - 3)$

(I) $(x, y) \rightarrow (x - 3, y + 7)$

3) Which of the following is true for an isometry?

(A) The preimage and the image are congruent.

(B) The preimage is larger than the image.

(C) The preimage is smaller than the image.

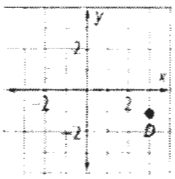
(D) The preimage is in the same position as the image.

-6 $+7$

4) $\triangle RSV$ has coordinates $R(2, 1)$, $S(3, 2)$, and $V(2, 6)$. A translation maps point R to R' at $(-4, 8)$. What are the coordinates for S' for this translation?

(F) $(-6, -4)$ (G) $(-3, 2)$ (H) $(-3, 9)$ (I) $(-4, 13)$

5) In the graph at the right, point D is reflected across the y-axis. What are the coordinates of its image?



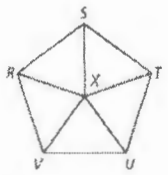
(A) $(3, -1)$ (C) $(-3, -1)$

(B) $(3, 1)$ (D) $(-3, 1)$

6) The coordinates of the vertices of $\triangle CDE$ are $C(1, 4)$, $D(3, 6)$, and $E(7, 4)$. If the triangle is reflected over the line $y = 3$, what are the coordinates of the image of D?

(F) $(3, -6)$ (G) $(3, -3)$ (H) $(3, 0)$ (I) $(3, 9)$

7) Point X is the center of regular pentagon $RSTUV$. What is the measure of the angle of rotation that will map S onto U?



(A) 70 (C) 144

(B) 72 (D) 216

8) Which type of symmetry is shown by the lowercase letter w?

(F) reflectional symmetry (H) no symmetry

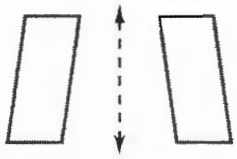
(G) point symmetry (I) rotational symmetry

Debatable

9) What are the coordinates of $(2, -5)$ after a 90° rotation about the origin?

(A) $(5, 2)$ (B) $(-5, 2)$ (C) $(5, -2)$ (D) $(-2, -5)$

10) What type of isometry is shown at the right?



(F) translation (H) reflection

(G) rotation (I) glide reflection

11) Which type(s) of symmetry does the uppercase letter H have?

(A) reflectional symmetry (C) reflectional and point symmetry

(B) point symmetry (D) rotational symmetry

12) Which of the following figures will tessellate a plane?

(F) a regular pentagon (H) a regular octagon

(G) a regular hexagon (I) a regular decagon

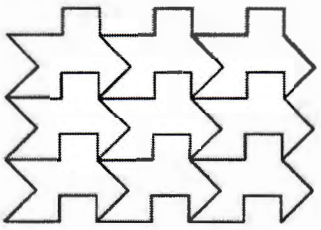
13) What type(s) of symmetry is shown in the tessellation below?

(A) glide reflectional symmetry

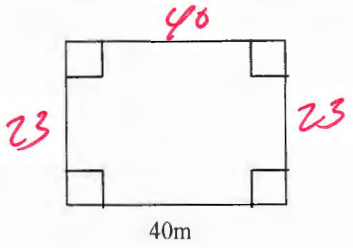
(B) reflectional and rotational symmetry

(C) rotational and translational symmetry

(D) translational symmetry

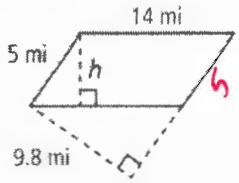


14) The figure is a rectangle with perimeter 126 m. What is the area?



$A = bh$
$= 40 \times 23$
$= 920 m^2$

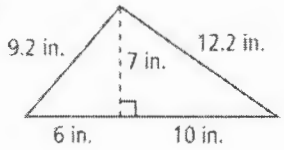
15) Find the value of h.



$A = bh$
$= 5 \times 9.8$
$= 49 mi^2$
$A = bh$
$49 = 14 \times h$
$h = 3.5 mi$

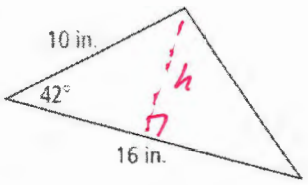
Find the area of the following triangles. Round to the nearest 0.1 if necessary.

16)



$A = \frac{1}{2}bh$
$= \frac{1}{2} \times 16 \times 7$
$= 56 in^2$

17)

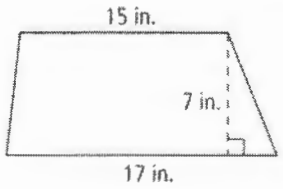


$\sin 42^\circ = \frac{h}{10}$
$h = 6.7 in.$

$A = \frac{1}{2}bh$
$\approx \frac{1}{2} \cdot 16 \cdot 6.7$
$\approx 53.6 in^2$

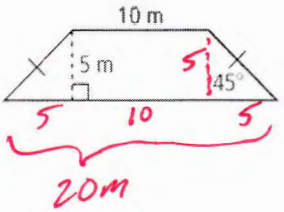
Find the area of the following trapezoids. Round to the nearest 0.1 if necessary.

18)



$A = \frac{1}{2}(b_1 + b_2)h$
$= \frac{1}{2}(15 + 17)\ 7$
$= \frac{1}{2}(32)\ 7$
$= 112 in^2$

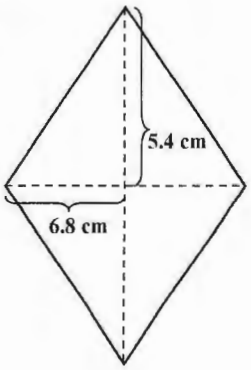
19)



$A = \frac{1}{2}(b_1 + b_2)h$
$= \frac{1}{2}(10 + 20)\ 5$
$= 75 m^2$

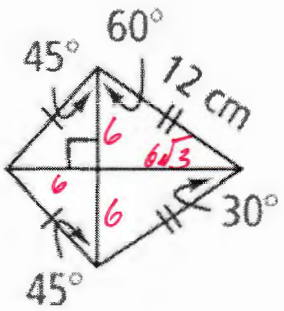
Find the area of the following kite and rhombus trapezoids. Round to the nearest 0.1 if necessary.

20)



$A = \frac{1}{2}d_1 d_2$
$= \frac{1}{2} \times 10.8 \times 13.6$
$\approx 73.4 cm^2$

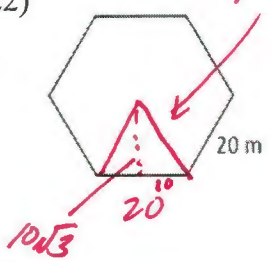
21)



$A = \frac{1}{2}d_1 d_2$
$= \frac{1}{2}(12)(6 + 6\sqrt{3})$
$\approx \frac{1}{2}(12)(16.4)$
$\approx 98.4 cm^2$

Find the area of the following regular polygons. Round to the nearest 0.1 if necessary.

22)



30-60-90

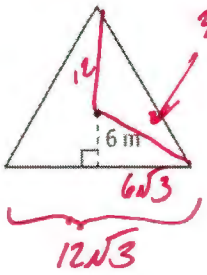
$A = \frac{1}{2}sam$

$= \frac{1}{2} \times 20 \times 10\sqrt{3} \times 6$

$= 600\sqrt{3}$

$\approx 1039.2\ m^2$

23)



30-60-90

$A = \frac{1}{2}bh$

$= \frac{1}{2} \times 12\sqrt{3} \times 18$

$= 108\sqrt{3}$

$\approx 187.1\ m^2$

24) The shortest side of a pentagon is 4 cm. The shortest side of a similar pentagon is 9 cm. The area of the larger pentagon is 243 cm^2. What is the area of the smaller pentagon?

Ratio of sides $\frac{4}{9}$ → Ratio of areas $\frac{16}{81}$

$\frac{16}{81} = \frac{x}{243}$

$x = 48\ cm^2$

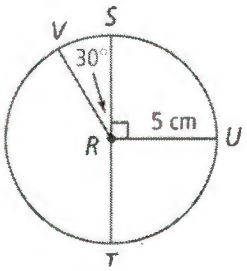
25) The area of a regular nonagon is 34 m^2. What is the area of a regular nonagon with sides five times the sides of the smaller nonagon?

Ratio of sides $\frac{1}{5}$ → Ratio of areas $\frac{1}{25}$

$\frac{1}{25} = \frac{34}{x}$

$x = 850\ m^2$

Find the ARC LENGTH OF THE FOLLOWING. Leave your answers in terms of π.



26) $\overset{\frown}{SV}$

$AL = \frac{x}{360}\pi d$

$= \frac{30}{360} \times \pi \times 10$

$= \frac{10}{12}\pi = \frac{5}{6}\pi\ cm$

27) $\overset{\frown}{UV}$

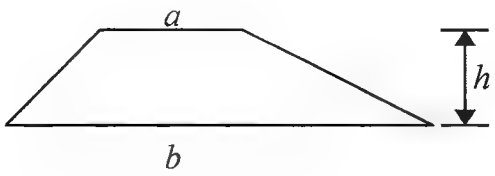
$AL = \frac{x}{360}\pi d$

$= \frac{120}{360} \times \pi \times 10$

$= \frac{10}{3}\pi\ cm$

28) The trapezoid below has an area that is $756\ cm^2$

$a = 39$ cm. $h = 18$ cm.



$b =$ 45 cm

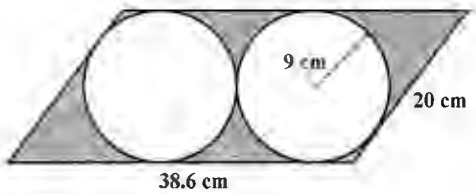
$A = \frac{1}{2}(b_1 + b_2)h$

$756 = \frac{1}{2}(39 + b)18$

$84 = 39 + b$

$b = 45$ cm

29) Find the shaded region in the parallelogram below. Round to the nearest 0.1 if necessary.



Area = Parallelogram − 2 Circles

$= bh - 2\pi r^2$

$= (38.6 \times 18) - (2 \times 3.14 \times 9^2)$

$= 694.8 - 508.68$

$\approx 186.1\ cm^2$