How Do You Make Chicken Napoleon?

For these pairs of similar figures, find the length of each side marked with a variable. Round to the nearest tenth. Write each variable letter in the box containing the length of that side.

1

14 in.   11 in.   h   15 in.

2 Hint: The figure has been rotated.

9 ft   12 ft   a   5 ft

3

6.5 m   3.7 m   e   4.0 m

4

10 cm   6 cm   8 cm   s   y   13 cm

5

n   70 ft   o   88 ft   53 ft   90 ft

6

9.6 in.   11.2 in.   5.7 in.   t   e   9.1 in.

7

48 m   y   u   64 m   43 m   74 m

8

11.8 cm   6.2 cm   16.0 cm   o   101 cm   t

9

AC = 30 ft
AB = 13 ft
EB = 8 ft

D   E   p   A   B   C

10

TR = 15.5 in.
SP = 20 in.
ST = 12 in.

S   T   R   P   s   Q

11

75 m   125 m   b   100m   l   46 m

12

4.3 cm   5.1 cm   2.7 cm   n   r   9.8 cm

27.9 m	25.8 in.	2.3 m	21.3 in.	13.7 cm	42.2 ft	76.7 m	9.8 cm	19.3 ft	5.3 cm	19.1 in.	15.3 in.

65.7 ft	61.3 m	71.6 ft	6.2 cm	41.5 m	8.8 cm	18.5 ft	6.7 ft	11.6 cm	17.9 in.	16.3 cm	62.7 m

Monster Mysteries

1. HOW CAN YOU STOP A MONSTER FROM BITING HIS NAILS?

_____

12.5 10 $3\frac{8}{9}$ 9 4.39 11 12.5 1.92 9 10 $9\frac{1}{3}$ 3.91 4.39 $8\frac{1}{4}$ 9 3.91

2. HOW CAN YOU TELL WHEN THERE IS A MONSTER IN BED WITH YOU?

_____

$2\frac{2}{5}$ 6 20 4.39 9 12.5 $8\frac{1}{4}$ 35 4.39 11 3.91 $5\frac{3}{5}$ 10 $\frac{2}{3}$ 10 12.5 10 3.91


TO DECODE THE ANSWERS TO THE TWO QUESTIONS ABOVE:

Find the length of the side indicated in any exercise below. Each time this length appears in the code, write the letter of that exercise above it. Keep working and you will decode the two mystery answers.

△ ABC ~△ DEF. The letters **a**, **b**, **c**, **d**, **e**, and **f** represent the lengths of the sides.
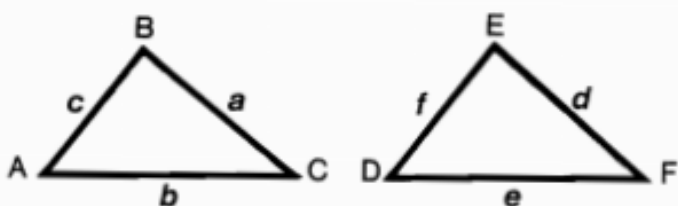
△ RST ~△ XYZ. The letters **r**, **s**, **t**, **x**, **y**, and **z** represent the lengths of the sides.

Ⓘ Find **e**, if **a** = 8, **d** = 22, **b** = 4.
Ⓣ Find **d**, if **b** = 6, **e** = 15, **a** = 8.
Ⓔ Find **a**, if **f** = 32, **c** = 12, **d** = 24.
Ⓝ Find **c**, if **f** = 15, **b** = 7, **e** = 3.
Ⓨ Find **f**, if **c** = $2\frac{1}{2}$, **d** = 24, **a** = 10.
Ⓚ Find **b**, if **c** = 5, **e** = 7, **f** = 9.
Ⓞ Find **a**, if **b** = 11, **e** = 8, **d** = 6
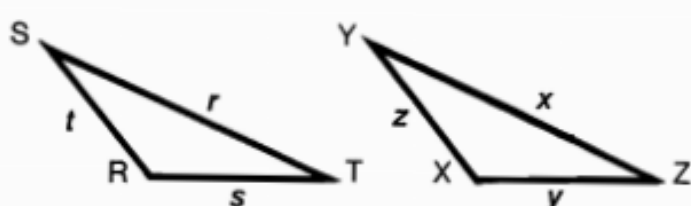
Ⓑ Find **t**, if **s** = $1\frac{1}{2}$, **y** = 5, **z** = 8.
Ⓡ Find **y**, if **s** = 42, **r** = 9, **x** = 2.
Ⓟ Find **r**, if **z** = 5, **x** = $2\frac{1}{3}$, **t** = 12.
Ⓢ Find **x**, if **s** = 2, **r** = 2.3, **y** = 3.4.
Ⓦ Find **s**, if **z** = 3, **y** = 4.8, **t** = 1.2.
Ⓗ Find **z**, if **r** = **x**, **t** = 4.39.
Ⓙ Find **t**, if **y** = 3, **s** = 2, **z** = 1.

Ⓐ A flagpole casts a shadow 25 meters long. If a woman who is 1.6 meters tall casts a shadow 4 meters long at the same time and location, the flagpole is ___ meters tall.

Ⓜ A building casts a shadow 37.5 meters long. If a meter stick casts a shadow 3 meters long at the same time and location, the building is ___ meters high.
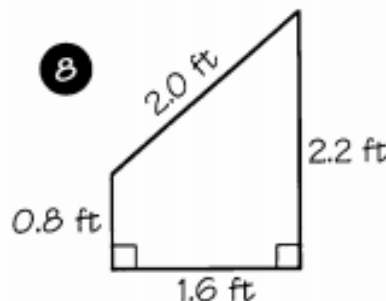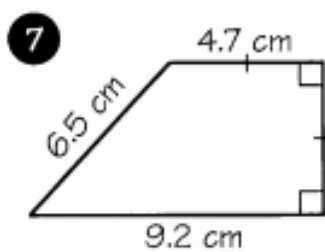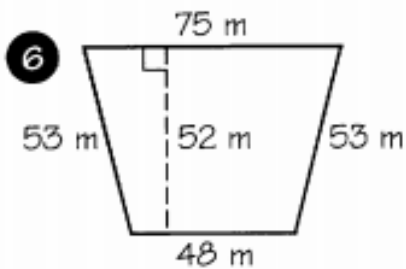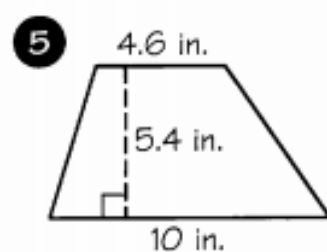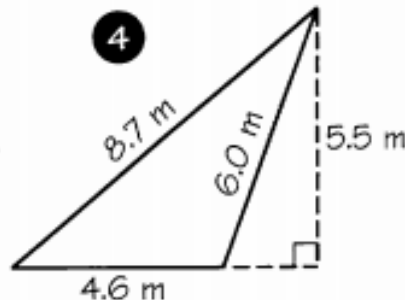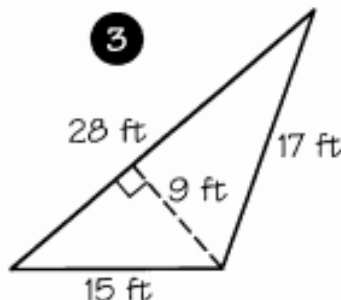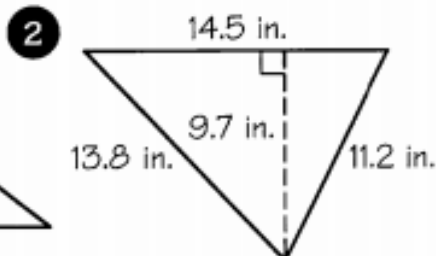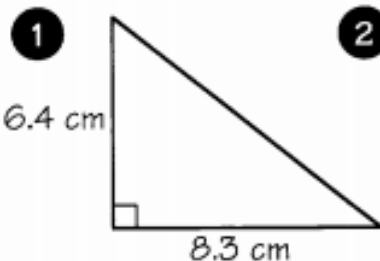

1.6m
←4m→   ←25m→   h
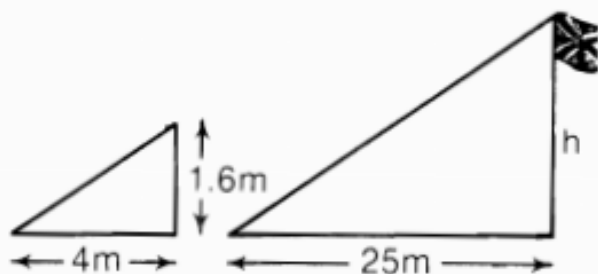
What Did the Scientist Say to the Hydrogen Atom That Claimed to Have Lost an Electron?

Find the area of the triangle or trapezoid.

1 6.4 cm 8.3 cm

2 14.5 in. 9.7 in. 13.8 in. 11.2 in.

3 28 ft 17 ft 9 ft 15 ft

4 8.7 m 6.0 m 5.5 m 4.6 m

5 4.6 in. 5.4 in. 10 in.

6 75 m 53 m 52 m 53 m 48 m

7 4.7 cm 6.5 cm 9.2 cm

8 2.0 ft 2.2 ft 0.8 ft 1.6 ft

Find the area of the shaded region inside each rectangle.

9 18 in. 36 in.

10 5 m ⊢5 m⊣⊢5 m⊣

11 11.0 cm 16.5 cm
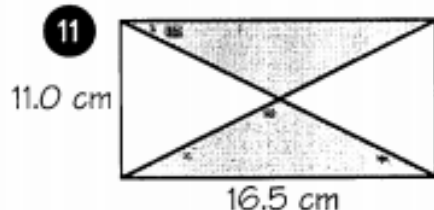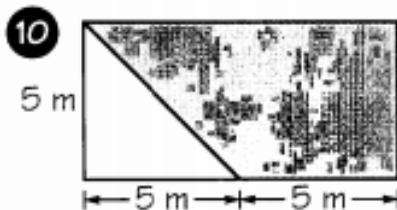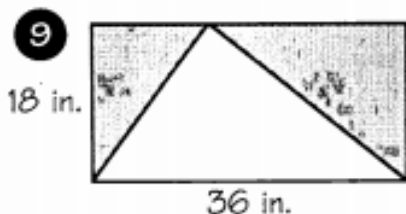
Find the area of the base of each prism.

12 5.8 ft 3.2 ft 5.0 ft

13 22 cm 7.5 cm 19 cm

14 10.0 in. 14.7 in. 3.3 in. 16.8 in.

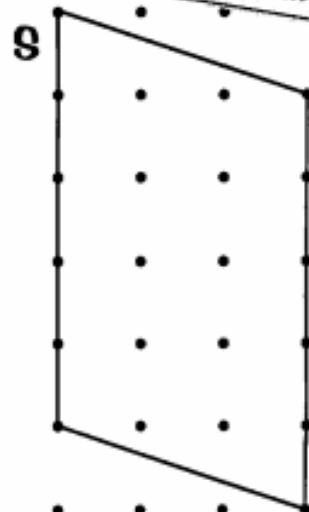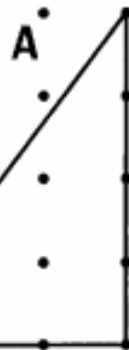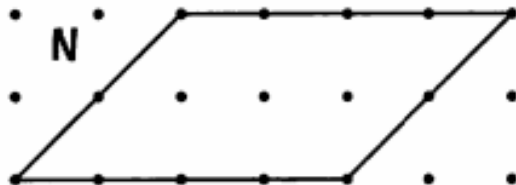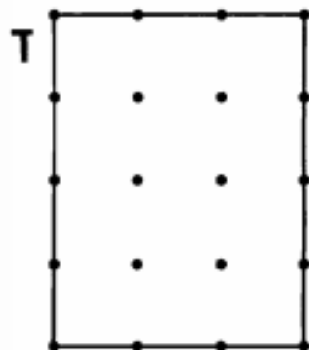| ST	AT	OM	AR	CH	TH	EY
8 ft^2	3198 m^2	126 ft^2	6.8 ft^2	2.4 ft^2	44.2 in.^{2}	86.5 cm^2
IF	OU	ND	TO	PO	LE	AN
37.5 m^2	333 in.^{2}	26.6 cm^2	82.5 cm^2	41.6 in.^{2}	70.3 in.^{2}	32.7 cm^2
SI	TA	KE	TI	LO	VE	ME
29.4 cm^2	324 in.^{2}	39.4 in.^{2}	36.3 m^2	90.8 cm^2	3245 m^2	12.7 m^2

Why Did the Bulletin Board Notice Feel Nervous?

Find the area of each figure (dots are 1 cm apart). Write the letter of the figure above its area in the boxes at the bottom of the page.

T   N   A   S

E

A   W

C   I   R

U

A   T   D

K

7.5 cm²	12 cm²	21 cm²	10.5 cm²	4.5 cm²	15 cm²	14 cm²	17.5 cm²	8 cm²	10 cm²	16 cm²	13.5 cm²	5.5 cm²	5 cm²	9.5 cm²	20 cm²	6 cm²	9 cm²	4 cm²

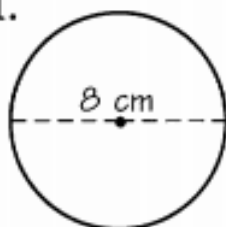# What Do You Call It When a Bunch of Kids Throw Circles at Each Other?

Answer column (left side):

Letter	Answer
E	47.1 in.
T	2.2 ft
A	1909 m
P	38.6 m
U	288.4 yd
H	22.5 ft
T	52.9 cm
S	16.3 in.
O	219.8 yd
G	44.7 cm
I	243.4 yd
B	6.3 m
N	23.9 ft
F	0.42 in.
I	1672 m
L	288 in.
W	25.1 cm
O	51.4 ft
R	7.5 in.
E	15.1 m
P	7.8 m
A	275.6 in.
G	0.35 in.
O	25 in.
T	188.4 ft
H	1570 m
T	1.7 ft

Use the diameter (*d*) or radius (*r*) to find the circumference.

1. (circle) 8 cm

2. (circle) 5.2 in.

3. (circle) 30 ft

4. (circle) 2.4 m
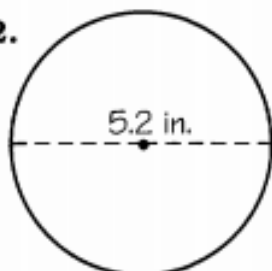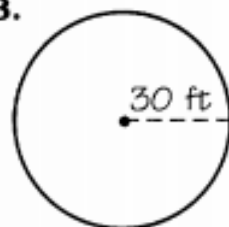
5. $d = 15$ in.

6. $d = 70$ yd

7. $r = 250$ m

8. $r = 3.8$ ft

Find the perimeter. All curves shown are semicircles.

9. (figure) 60 yd, 50 yd

10. (figure) 20 ft

11. (figure) 7.5 m, 9.2 m
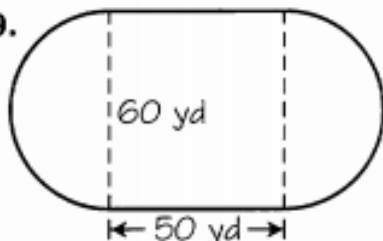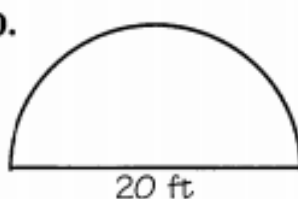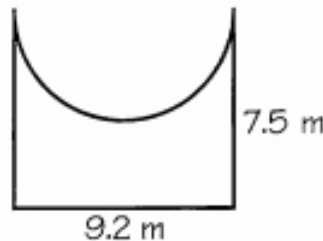
Solve.

12. A dartboard has a circumference of 78.5 in. What is the diameter?

13. A clock has a circumference of 166 cm. What is the diameter?

14. A pizza has a circumference of 47.1 in. What is the radius?

15. A tire has a circumference of 10.7 ft. What is the radius?

16. The first Ferris wheel, designed by George Ferris, was built in 1893 in Paris, France. It had a diameter of 76 m. About how far would you travel in 8 turns of this wheel?

17. A 10-speed bicycle tire has a diameter of 27 in. In highest gear, the tire rotates 3.4 times with each pedal turn. About how far does the bike travel, in this gear, with each pedal turn?

18. A can contains 3 tennis balls, tightly packed. Each ball has a diameter of 2.5 in. How much greater is the circumference of the can than the height of the can?

2.5"

19. Two runners are to race one lap on a circular track. The radius to the inside lane is 50 m. The radius to the outside lane is 51 m. How much of a head start should the runner on the outside get?

51 m, 50 m

What Happened When the TV Set Asked the Remote Control for a Date?

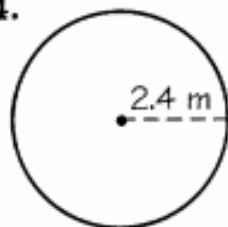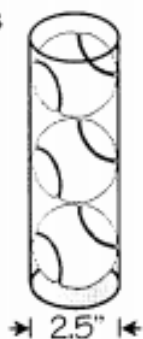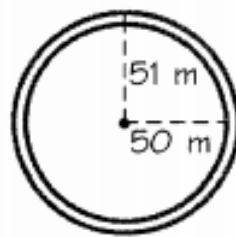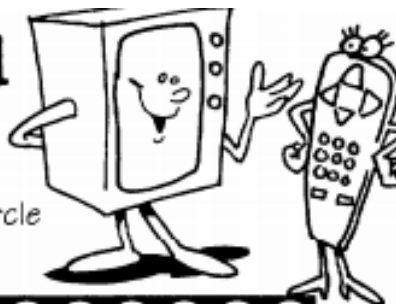Find each answer in the answer column. Write the letter of the answer in the circle that contains the exercise number. Most answers are rounded. Use 3.14 for π.

Use the diameter (d) or radius (r) to find the area.

1. (circle) 3 in.

2. (circle) 5.2 m

3. (circle) 80 cm

4. (circle) 18.8 mi

5. $r = 12$ in. 6. $r = 0.66$ mi 7. $d = 7.5$ m. 8. $d = 2$ cm

Solve.

9. Radio station KLUV broadcasts in all directions to a distance of 60 mi. What is the area over which the station can be heard?

10. How many squares are inside the circle below?
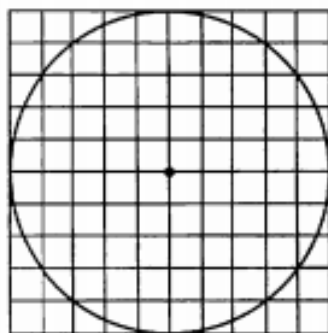
11. A fugitive has escaped in a train wreck. The police believe he could not have traveled more than 7 mi in any direction from the wreck. How many square miles must be searched?

12. A manhole cover has a diameter of 3 ft. It weighs 8.2 lb per square foot. How much does the manhole cover weigh?

13. A 12-inch diameter pizza is cut into 8 equal pieces. What is the area of each piece?

Find the area of the shaded region.

14. (circle) 10 ft, 14 ft

15. (figure) 6 cm, 11 cm

16. (figure) 8 in.

Answers 1–8

L 269.4 mi²
O 5024 cm²
S 44.2 m²
D 28.3 in.²
F 1.54 mi²
M 452.2 in.²
T 5196 cm²
E 84.9 m²
H 3.14 cm²
A 48.3 m²
U 1.37 mi²
Y 438.3 in.²
N 277.5 mi²

Answers 9–16

S 124.3 cm²
H 153.9 mi²
A 62.4 lb
T 301.4 ft²
F 18.9 in.²
E 78.5
I 57.9 lb
D 113.5 cm²
L 82.4
W 11.304 mi²
R 27.5 in.²
B 326.4 ft²
N 14.1 in.²
O 9285 mi²

7 11 2 14 6 16 4 10 1 8 12 5 15 3 9 13

How do Bulldogs get Flat Noses?

DIRECTIONS: Measure any angle below and find your answer in one of the boxes at the bottom. Write the vertex letter of the angle in the box. Keep working and you will discover the answer to the title question.
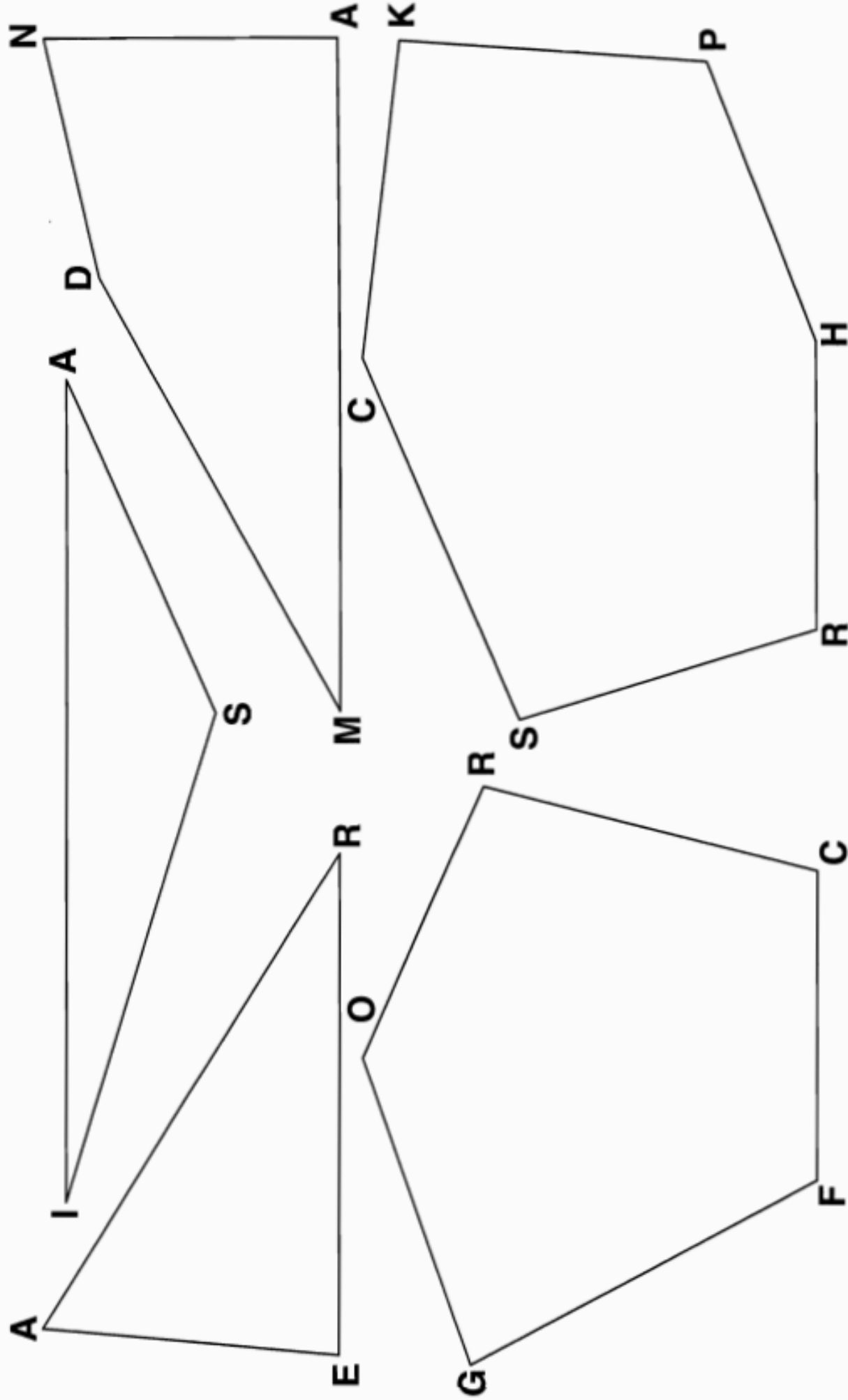
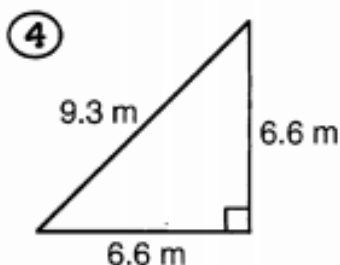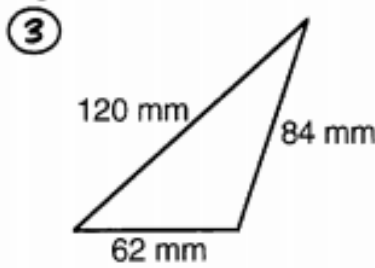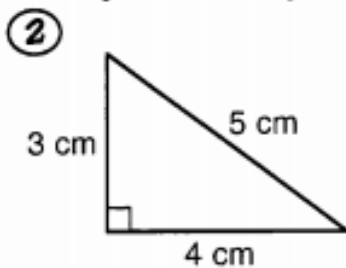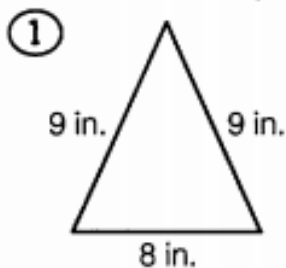| 118°	32°	136°	29°	104°	159°	63°	96°	17°	77°	82°	115°	24°	107°	93°	85°	164°	150°	90°	100°	139°

Where Do Aliens Leave Their Spaceships?

Write the letter of the correct answer in the box containing the exercise number.
If the answer has a ●, shade in the box instead of writing a letter in it.

In Exercises 1-6, write two ways to classify the triangle.

① 9 in. 9 in. 8 in.

② 3 cm 5 cm 4 cm

③ 120 mm 84 mm 62 mm

④ 9.3 m 6.6 m 6.6 m

⑤ 15 ft 15 ft 15 ft

⑥ 7 mi 4 mi 4 mi
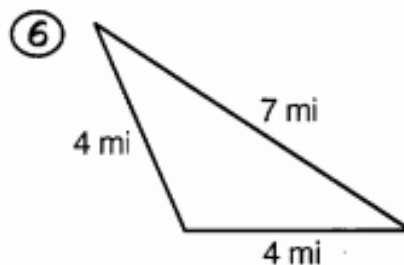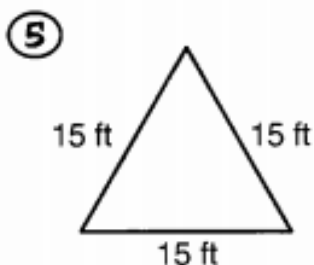
(L) acute; scalene
(A) acute; isosceles
(N) acute; equilateral
(E) right; scalene
(O) right; isosceles
(T) obtuse; scalene
● obtuse; isosceles

In Exercises 7-14, find the measure of the angle labeled x.

⑦ x 72° 45°

⑧ 38° x

⑨ 70° x

⑩ 106° x

⑪ 21° x 126°

⑫ x

⑬ x

⑭ x 48°
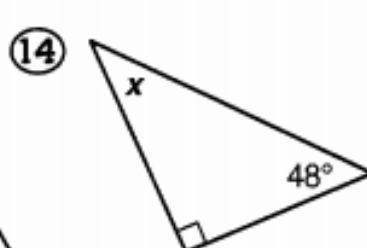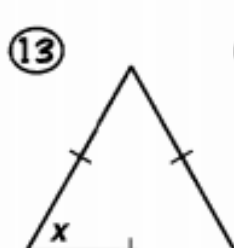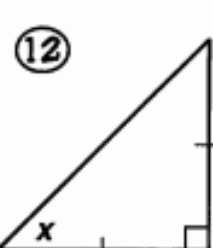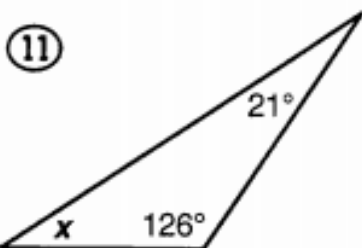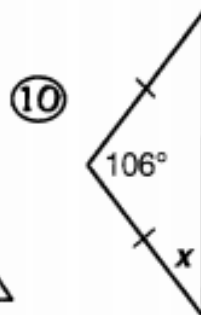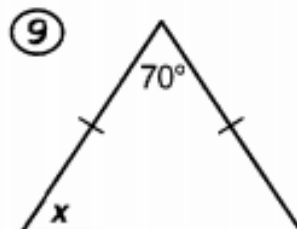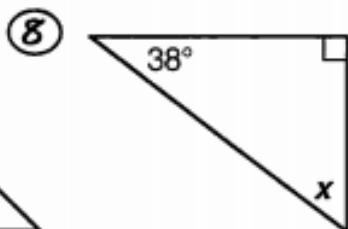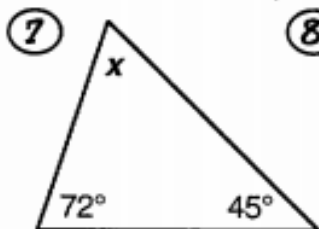
● 29°
(R) 33°
(G) 37°
(A) 42°
(E) 45°
(I) 52°
(S) 55°
● 60°
(N) 61°
(M) 63°

In Exercises 15-18, mark the correct choice.

⑮ Which of the following is possible:
(L) A triangle with two right angles.
(M) A triangle with two obtuse angles.
(P) A triangle with two acute angles.

⑯ Which of the following is possible:
(N) An equilateral right triangle.
(R) An isosceles right triangle.
(D) A scalene equiangular triangle.

⑰ Which of the following is true:
(K) All equilateral triangles are equiangular.
(S) All obtuse triangles are scalene.

⑱ Which of the following is true:
(G) All isosceles triangles are equilateral.
(T) All equilateral triangles are isosceles.

14	3	6	15	1	11	17	8	5	10	13	7	2	18	12	4	16	9