

Lesson Masters

7-1A Lesson Master

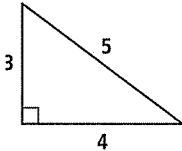
Questions on SPUR Objectives
See pages 480–483 for objectives.*

SKILLS Objective A

In 1 and 2, find the area of the figure. First indicate the calculation you will do.

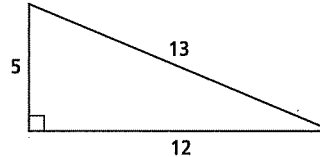
1. calculation _____

area _____



2. calculation _____

area _____



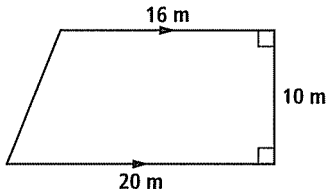
SKILLS Objective B

In 3 and 4, a figure is given.

- Draw a segment to create a rectangle and a right triangle for each figure.
- Indicate the calculation you will do.
- Find the area of the entire region as the sum of two areas.

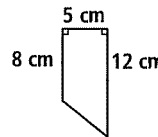
3. calculation _____

area _____



4. calculation _____

area _____



PROPERTIES Objective E

5. *Multiple choice.* Which sentence(s) illustrate the Commutative Property of Multiplication? _____

A $2 \cdot 3 = 3 \cdot 2$

B $\frac{1}{2} \cdot 8 = 8 \cdot \frac{1}{2}$

C $\frac{3}{4} \cdot 12 = 3 \cdot \frac{12}{4}$

D $-1 + 3 = 3 + -1$

E $100\% \cdot 6 = 1 \cdot 6$

F $ab = ba$

6. *Multiple choice.* Which sentence(s) illustrate the Associative Property of Multiplication? _____

A $(2 + 3) + 4 = 2 + (3 + 4)$

B $(ab)c = a(bc)$

C $(\frac{1}{2} \cdot \frac{1}{3}) \frac{1}{4} = \frac{1}{2} (\frac{1}{3} \cdot \frac{1}{4})$

D $9(8 \cdot 7) = 9(7 \cdot 8)$

E $3.2(10 \cdot 2) = (3.2 \cdot 10) \cdot 2$

* Refer to the Student Edition for SPUR Objectives.

PROPERTIES Objective F

7. Use the area formula for a rectangle to explain how to find the area of a right triangle.

8. Tell whether the situation requires finding perimeter or area.

- a. fencing needed for a garden _____ b. planting room in the garden _____
c. carpeting needed for a room _____ d. trim needed to edge a room _____

USES Objective G

9. What is the area of a piece of legal typing paper $8\frac{1}{2}$ inches by 14 inches?

_____ calculation _____ answer

10. The school marching band has two sections. The first has 3 rows each with 8 musicians. The next section has 4 rows with 5 students in each row. How many musicians are in the marching band?

_____ calculation _____ answer

REPRESENTATIONS Objective K

11. Draw a gridded rectangle to represent $6 \cdot 3.5 = 21$.

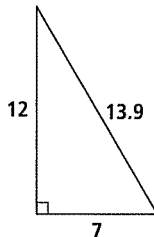
12. Draw three rectangular arrays to represent the number 18.

7-1B

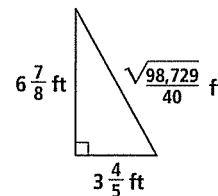
SKILLS Objective A: Find the area of a triangle given appropriate dimensions.

In 1-2, find the area of the figure. First indicate the calculation you will do.

1. calculation _____
area _____



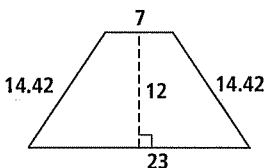
2. calculation _____
area _____



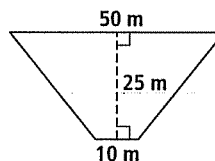
SKILLS Objective B: Find the area of a trapezoid (including special types) given appropriate dimensions.

In 3-4, a figure is given. First draw a segment or segments to create a rectangle and a triangle or triangles. Then find the area of the entire region as the sum or difference of the areas.

3. area _____



4. area _____



PROPERTIES Objective E: Recognize and use the Distributive Property and the Commutative and Associative Properties of Multiplication.

In 5 and 6, complete each sentence to illustrate the Commutative Property of Multiplication.

5. $\frac{1}{2} \cdot \frac{3}{5} =$ _____

6. $p \cdot r =$ _____

In 7 and 8, complete each sentence to illustrate the Associative Property of Multiplication.

7. $(12 \cdot 28) \cdot 37 =$ _____

8. $\left(\frac{a}{b} \cdot \frac{c}{d}\right) \frac{f}{g} =$ _____

PROPERTIES

Objective F: Recognize the differences between perimeter and area.

9. Tell whether the situation implies perimeter or area.
- covering the open space on the wall of your room with posters _____
 - walking around the block _____
 - mowing the yard _____
 - a frame on a picture _____

USES

Objective G: Find areas of rectangles and the number of elements in rectangular arrays in applied situations.

10. A custodian is setting up chairs in a gymnasium. He makes 30 rows of 18 chairs each, with an aisle down the middle of each row. How many chairs are in each side of the arrangement?
- _____
11. A table in the classroom is 5 ft long and 2.5 ft wide.
- What is the area of the table in square feet? _____
 - How long is the table in inches? _____
 - How many inches wide is the table? _____
 - What is the area in square inches? _____

REPRESENTATIONS

Objective K: Picture multiplication using arrays or area.

12. Draw a gridded rectangle to represent $5 \cdot 2.5 = 12.5$.
13. Draw three rectangular arrays to represent the number 24. Have two of them show the Commutative Property of Multiplication. Then write the multiplication above each array.

7-2A Lesson Master

Questions on SPUR Objectives
See pages 480–483 for objectives.

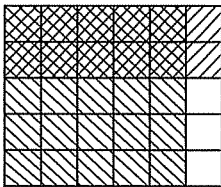
SKILLS Objective C

In 1–14, write the product as a whole number, mixed number, or fraction in lowest terms.

1. $\frac{1}{5} \cdot \frac{1}{2}$ _____
2. $\frac{1}{p} \cdot \frac{1}{q}$ _____
3. $6 \cdot \frac{1}{3}$ _____
4. $\frac{1}{t} \cdot 7$ _____
5. $\frac{3}{10} \cdot \frac{3}{5}$ _____
6. $\frac{4}{9} \cdot \frac{3}{8}$ _____
7. $5\frac{1}{4} \cdot 1\frac{1}{7}$ _____
8. $100 \cdot 6\frac{3}{4}$ _____
9. $\frac{4}{5} \cdot \frac{5}{8} \cdot \frac{2}{3}$ _____
10. $3\frac{1}{3} \cdot 4\frac{1}{2} \cdot 1\frac{4}{5}$ _____
11. $\frac{q}{r} \cdot \frac{r}{q}$ _____
12. $\frac{3}{4} \cdot \frac{5}{6} \cdot \frac{4}{3}$ _____
13. $(9 \cdot \frac{3}{4}) \cdot (8 \cdot \frac{2}{3})$ _____
14. $\frac{x}{12} \cdot \frac{156}{x}$ _____

REPRESENTATIONS Objective K

15. What multiplication is pictured below?
16. Draw an area model to show $\frac{1}{3} \cdot \frac{3}{4}$.



17. Consider your drawing for question 16.
 - a. What number does the whole rectangle represent? _____
 - b. What does the intersection of the two shaded areas represent? _____
 - c. What part of the whole rectangle is shaded twice? _____
18. The top of a coffee table is in the shape of a rectangle $\frac{4}{5}$ yard long and $\frac{1}{2}$ yard wide.
 - a. At the right, draw an area model to show the multiplication.
 - b. What is the area of the coffee table top?

7-2B Lesson Master**SKILLS** Objective C: Multiply fractions.

In 1-20, write the product as a whole number, mixed number, or fraction in lowest terms.

1. $\frac{1}{7} \cdot \frac{1}{6}$ _____

2. $\frac{1}{7} \cdot \frac{1}{8}$ _____

3. $10 \cdot \frac{1}{5}$ _____

4. $\frac{1}{x} \cdot 9$ _____

5. $\frac{5}{14} \cdot \frac{5}{7}$ _____

6. $\frac{5}{21} \cdot \frac{7}{15}$ _____

7. $\frac{5}{9} \cdot \frac{9}{35} \cdot \frac{7}{11}$ _____

8. $2\frac{1}{3} \cdot 5\frac{1}{4} \cdot 3\frac{1}{2}$ _____

9. $\frac{v}{w} \cdot \frac{w}{v}$ _____

10. $\frac{2}{5} \cdot \frac{7}{8} \cdot \frac{5}{2}$ _____

11. $\frac{2}{5} \cdot \frac{3}{7} \cdot \frac{1}{2}$ _____

12. $\frac{y}{7} \cdot \frac{63}{y}$ _____

13. $9 \cdot \frac{1}{b}$ _____

14. $7 \cdot \frac{1}{14c}$ _____

15. $(5 \cdot \frac{8}{9}) \cdot (9 \cdot \frac{3}{4})$ _____

16. $3\frac{1}{9} \cdot 4\frac{1}{2}$ _____

17. $1\frac{5}{7} \cdot 1\frac{1}{6} \cdot 1\frac{1}{2}$ _____

18. $(6 \cdot \frac{2}{5}) \cdot (4 \cdot \frac{3}{5})$ _____

19. $200 \cdot 5\frac{5}{8}$ _____

20. $2\frac{2}{3} \cdot 5\frac{1}{2}$ _____

21. Write the Multiplication of Fractions Property using the fractions $\frac{a}{b}$ and $\frac{c}{d}$.

22. Write the reciprocal for each number.

a. 7 _____

b. 2.3 _____

REPRESENTATIONS

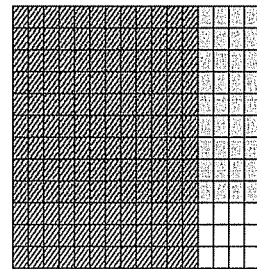
Objective K: Picture multiplication using arrays or area.

In 23 and 24, draw an area model to show the multiplication. Then explain the meaning of each part, including the product.

23. $\frac{3}{5} \cdot \frac{1}{4}$

24. $\frac{5}{8} \cdot \frac{2}{3}$

25. Write a multiplication sentence to show what is pictured in the grid.

**REVIEW** Lesson 7-1, Objective G

26. Sandy's garden takes up $\frac{5}{8}$ of the width of her backyard and $\frac{3}{10}$ of its length.
What portion of Sandy's backyard does her garden take? _____
27. A rubber-backed piece of material, 30 in. by 60 in., is being cut into squares, each $7\frac{1}{2}$ in. long on a side, to make mouse pads for the school computers.
- a. How much material is needed to make mouse pads for 32 computers? _____
- b. What is the area of the leftover material, or how much more material is needed? _____

7-3A Lesson Master

Questions on SPUR Objectives
See pages 480–483 for objectives.

PROPERTIES Objective E

In 1–6, use the Distributive Property to simplify the expression.

1. $3d + 6d$

2. $(2.4 + 6.1)10$

3. $\frac{1}{2}e + \frac{3}{4}e - e$

4. $5(7f + 5g)$

5. $2h - 3i + 6i + 9h$

6. $-2(4 + x) + 3(x - 1)$

In 7–10, use the Distributive Property to do the operation mentally.

a. Write the $x(a + b)$ or $x(a - b)$ expression you used.

b. Give the answer.

7. $106 \cdot 56$ a. _____ b. _____

8. $999(250)$ a. _____ b. _____

9. $1\frac{1}{2} \cdot 32$ a. _____ b. _____

10. 9% of 80 a. _____ b. _____

In 11–16, determine whether the statement is an instance of the Distributive Property.

11. $4.2 \cdot 3 + 0.8 \cdot 3 = (4.2 + 0.8)3$

12. $3(2 - \frac{1}{3}) = 3 \cdot 2 - \frac{1}{3}$

13. $7(m - n) = 7m - 7n$

14. $(a + b)z = az + bz$

15. $3q - 5q = (3 - 5)q$

16. $98 \cdot 52 = (100 - 2)52$

REPRESENTATIONS Objective L

In 17 and 18, show why the equation is true using the areas of rectangles.

17. $2p + 5p = (2 + 5)p$

18. $3(4 - 1) = 3 \cdot 4 - 3 \cdot 1$

7-3B Lesson Master**PROPERTIES**

Objective E: Recognize and use the Distributive Property and the Commutative and Associative Properties of Multiplication

In 1-4, use the Distributive Property to simplify the expression.
Show your work.

1. $5x + 7x$

2. $9y + 3y + 22y$

3. $(7.9 + 3.4)10$

4. $(5.6 + 8.2)3$

In 5-10, use the Distributive Property to simplify the expression.

5. $\frac{5}{8}p + 1\frac{3}{4}p - 2p$

6. $\frac{7}{9}q - 3q + \frac{5}{18}q$

7. $9(4m + 5n - 7k)$

8. $5r - 7s + 8r - 11s$

9. $-5(6 + 2w) + 4(3w - 9)$

10. $4(11z + 12) - 3(10z + 14)$

In 11-16, use the Distributive Property to do the operation mentally.

- a. Write the $x(a + b)$ or $x(a - b)$ expression you used.
b. Give the answer.

11. $108 \cdot 20$ a. _____ b. _____

12. $11 \cdot 852$ a. _____ b. _____

13. $52(993)$ a. _____ b. _____

14. $4\frac{1}{3} \cdot 12$ a. _____ b. _____

15. $2\frac{5}{8} \cdot 48$ a. _____ b. _____

16. 38% of 70 a. _____ b. _____

In 17–24, Determine whether the statement is an instance of the Distributive Property.

17. $7(3 + 2) = 7 \cdot 3 + 3 \cdot 2$

18. $(5 - 2)9 = 45 + 18$

19. $4.3 \cdot (-4) + 9.2 \cdot (-4) = [-4.3 + (-9.2)]4$

20. $8.6 \cdot (-5.2) + 9.2 \cdot 5.2 = (8.6 - 9.2)5.2$

21. $\frac{1}{2}B_1h + \frac{1}{2}B_2h = \frac{1}{2}(B_1 + B_2)h$

22. $r(s + t) = rs + rt$

23. $a(m - n) = am - n$

24. $4x(5y - 6z) = 20xy - 24xz$

REPRESENTATIONS

Objective L: Represent the Distributive Property with areas of rectangles.

In 25–30, show why the equation is true using the areas of rectangles.

25. $5 \cdot 4 + 5 \cdot 7 = 5 \cdot 11$

26. $8 \cdot 9 - 8 \cdot 3 = 8 \cdot 6$

27. $7t + 10t = 17t$

28. $15y - 8y = 7y$

29. $pq + nq = (p + n)q$

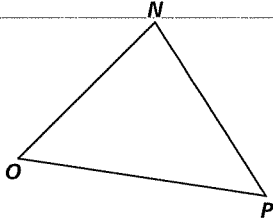
30. $mb - kb = (m - k)b$

7-4A Lesson Master

Questions on SPUR Objectives
See pages 480–483 for objectives.

SKILLS Objective A

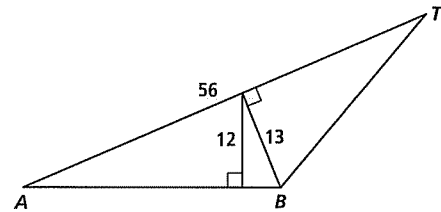
1. Draw all three altitudes in $\triangle NOP$.



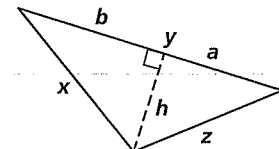
3. Find the area of $\triangle PAN$. _____

4. A triangle has an area of 75 m^2 and a base of 30 m.
What is the length of the altitude to that base? _____

5. Given $\triangle ATB$ at the right:
- Find the area of $\triangle ATB$ if $AT = 56$. _____
 - Find the length of h , the altitude to AB . _____

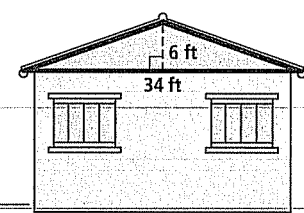


6. Use the triangle at the right and the formula for the area of a right triangle to explain why the formula for the area of any triangle is one half the base times the height.

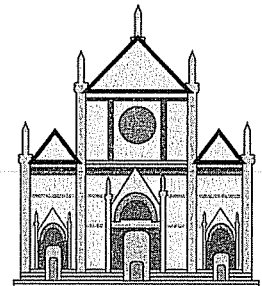


USES Objective H

7. A gable is the triangular part of a house that is immediately under the roof but not part of the main wall. Due to a windstorm, the Jones family needs to replace the aluminum siding on the side gable of their house. If the height of the gable is 6 feet and the base is 34 feet, what is the area they need to resurface? _____



8. The cathedral in Siena, Italy has three triangular mosaics at the top of its façade. The ones on the left and right are smaller than the large one in the middle. If each of the smaller ones has a base of about 3 meters and a height of about 2.6 meters and the middle triangle has a base of 6 meters and a height of about 5.2 meters, estimate the area covered by the three mosaics. _____

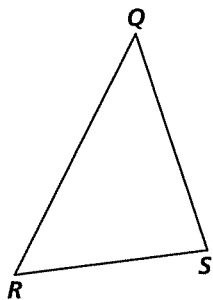


7-4B Lesson Master

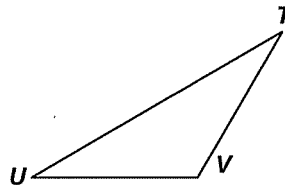
SKILLS Objective A: Find the area of a triangle given appropriate dimensions.

In 1 and 2, draw all three altitudes of the given triangle.

1.

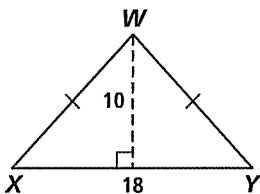


2.

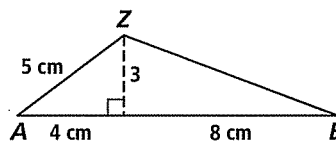


In 3-6, find the area of the given triangle.

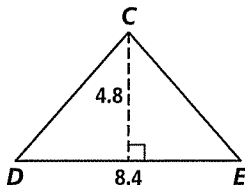
3.



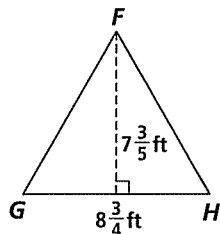
4.



5.



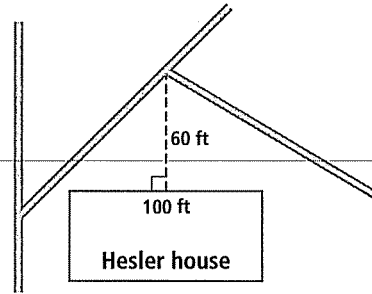
6.



7. a. A triangle has a side 12 units long. The altitude drawn to this side is 8 units long. Find the area of the triangle. a. _____
- b. Another side of this triangle is 16 units long. Find the length of the altitude to that side. b. _____
8. A right triangle has legs that are 5 in. and 12 in. long. The hypotenuse is 13 in. long.
- a. Find the area of the triangle. a. _____
- b. Find the length of the altitude drawn to the hypotenuse. b. _____

USES Objective H: Find areas of triangles or trapezoids in real situations.

9. The Heslers live on a corner with three roads adjacent to their house. Two of the roads cause the lawn on one side of the house to be triangular. The Heslers want to re-sod that part of the lawn. The width of the lawn along that side of the house is 100 feet. The length of the triangular lawn, perpendicular to the edge of the house to the point where the roads meet, is 60 feet. How much sod does the family need to buy?



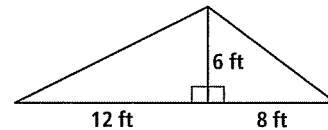
10. An amateur ship builder is making sails for a large sailboat. One of the two triangular sails will be 22 feet tall and 16 feet across the bottom. The other sail will be 18 feet tall and 14 feet across the bottom. What is the combined area of the two sails?

11. Steve wants to make a triangular pyramid with 4 faces. He takes 4 isosceles triangles and tapes them together. Each triangle is 4 inches wide at the bottom. The altitude of each triangle is 9 inches. What is the total area of the 4 triangular faces?

12. Brenda makes a cube using graph paper. Each face of the cube is an 8×8 grid. On each face, she colors a triangle that is 5 squares wide and 4 squares tall.

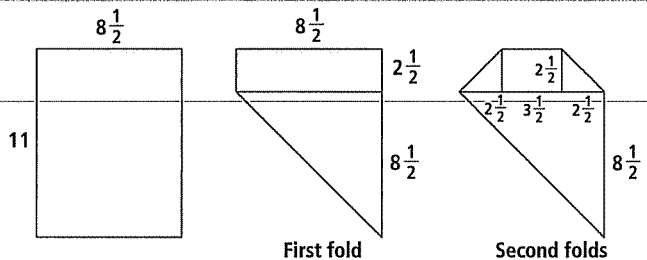
- a. What is the total area of the six triangles?
- b. What is the total uncolored area of the six faces of the cube?

13. Carlos has 4 pieces of wood with a combined surface area of 80 square feet. He needs to rebuild one side of a skateboard ramp with the dimensions shown. He can join pieces of wood with metal braces, but the surface must be without any gaps.



- a. Does Carlos have enough wood to rebuild the side of the ramp?
- b. Will he have any wood left over? If so, what is the area of the wood he will have left?

14. Bobby takes a piece of $8\frac{1}{2}$ -in. by 11-in. paper and folds the bottom over to the right side. Then he bends down the top two corners to create a shape with five sides. Find the area of the new figure by subtracting the areas of the three folded corners from the area of the original rectangle. Show your work.



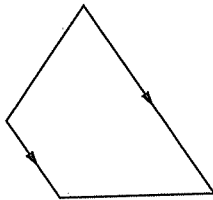
7-5A Lesson Master

Questions on SPUR Objectives
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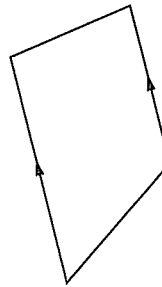
SKILLS Objective B

In 1 and 2, draw an altitude of the trapezoid.

1.

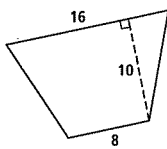


2.

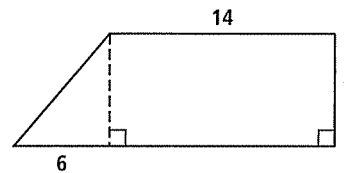


In 3 and 4, find the area of the trapezoid.

3.



4.



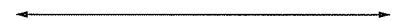
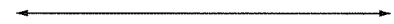
5. Name three special types of trapezoids, draw a picture of each, and give its area formula.

Drawing

Name _____

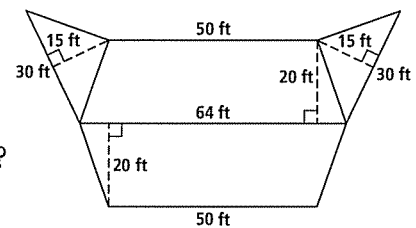
Formula _____

6. Use the parallel lines at the right to draw 4 parallelograms with different perimeters but the same area.

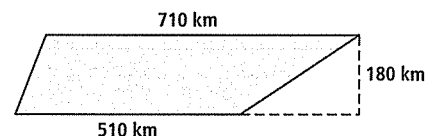


USES Objective H

7. The roof of the Bennett house is made up of two trapezoids and two triangles, as shown at the right (top view). If they are replacing the shingles, what is the area they will need to cover?



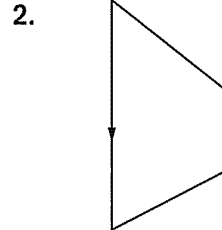
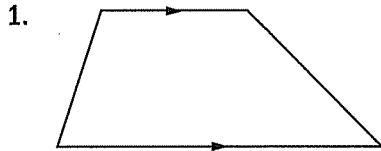
8. Tennessee is roughly shaped like a trapezoid. Using the given measures in the diagram at the right, estimate the area of the state.



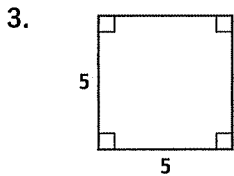
7-5B Lesson Master

SKILLS Objective B: Find the area of a trapezoid (including special types) given appropriate dimensions.

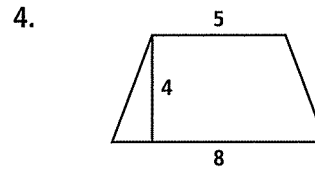
In 1 and 2, draw an altitude of the trapezoid.



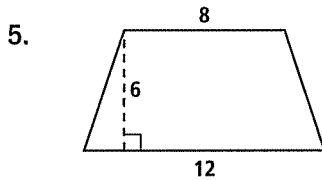
In 3–8, a. Find the area of the trapezoid. b. Name the trapezoid if it is one of the special types. Write “no” if it is not one of the special types.



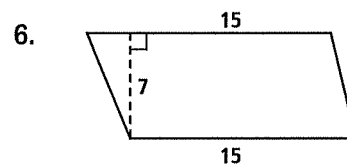
- a. _____
b. _____



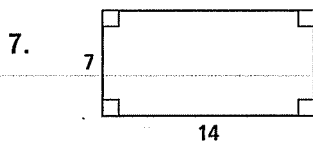
- a. _____
b. _____



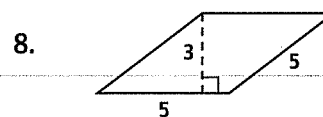
- a. _____
b. _____



- a. _____
b. _____

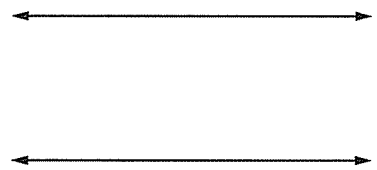


- a. _____
b. _____



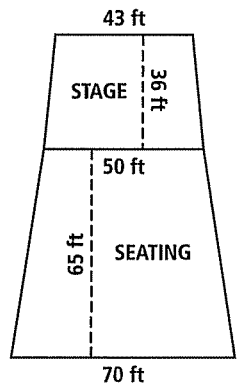
- a. _____
b. _____

9. a. Use the parallel lines at the right to draw 2 parallelograms with different perimeters, but the same area.
 b. Explain why the two parallelograms you drew have the same area.



USES Objective H: Find areas of triangles or trapezoids in real situations.

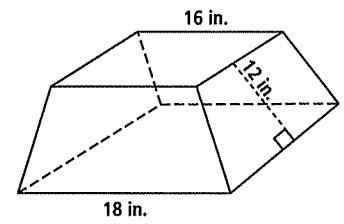
10. a. The seating area in a theater is in the shape of a trapezoid. The stage is 50 feet across at the front; the back row of seats is 70 feet wide. The seating area is 65 feet deep. What is the area of the seating area?
 b. The stage is also in the shape of a trapezoid. It is 50 feet wide at the front and 43 feet wide at the back. The stage is 36 feet deep. Find the area of the stage.



a. _____

b. _____

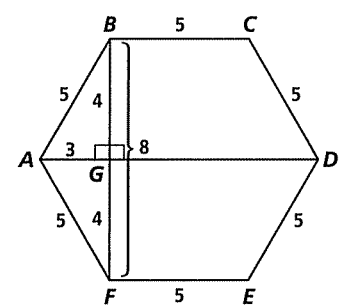
11. In a circus, platform boxes are used to showcase animal tricks. One of the platforms has 4 sides each shaped like a trapezoid. The platform is square on both the top and bottom. The top square is 16 inches on each side and the bottom square is 18 inches on each side. The height along each side face of the platform is 12 inches.
- a. What is the area of each side?
 b. What was the total surface area of the six faces of the platform?



a. _____

b. _____

12. Each side of a regular hexagon is 5 units long. The hexagon can be cut into two trapezoids. It is given that $AD = 11$ and $BF = 8$, bisected at G .
- a. Find the area of trapezoid $ABCD$.
 b. Find the area of the entire figure.



a. _____

b. _____

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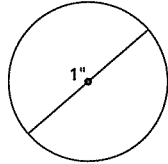
7-6A Lesson Master

Questions on SPUR Objectives
See pages 480–483 for objectives.

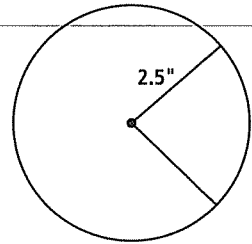
SKILLS Objective D

In 1 and 2, for each circle, a. write the calculation needed to find the circumference, and b. find the circumference to the nearest tenth.

1. a. _____
b. _____

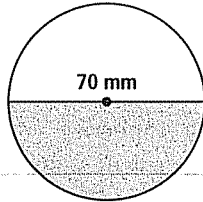


2. a. _____
b. _____

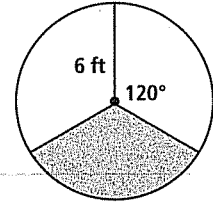


In 3 and 4, consider the shaded region. a. Write the calculation needed to find the area. b. Find the exact area.

3. a. _____
b. _____



4. a. _____
b. _____



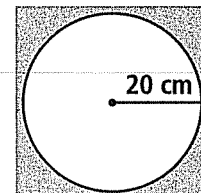
PROPERTIES Objective F

In 5–6, tell whether the situation requires determining circumference or area.

5. distance traveled by a rotating bicycle wheel _____
6. probability of hitting the bull's eye on a target _____
7. A circle has circumference 10π . Find its area. _____
8. *True or false.* Two circles with the same circumference must have the same area. _____

USES Objective I

9. How much fringe is needed to go around the edge of a circular table cloth with a 75-centimeter radius? _____
10. A circular bicycle track 400 meters long is planned for a city park. What should be its diameter? _____
11. A sprinkler rotates 90° and sprays water with a radius of 10 feet. How much ground does it water? _____
12. A pizza with a radius of 20 cm is on a square board as shown at the right. What is the area of the board not covered by the pizza?



7-6B Lesson Master

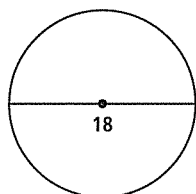
SKILLS Objective D: Find the area and circumference of a circle.

- If the diameter of a circle is 10 ft, what is the length of a radius of that circle? _____
- If the radius of a circle is 7 in., what is the length of a diameter of that circle? _____

In 3–6, for each circle, a. write the calculation needed to find the circumference, and b. find the circumference to the nearest tenth.

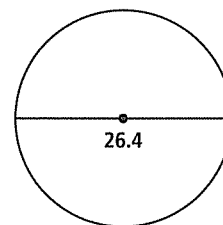
3. a. _____

b. _____



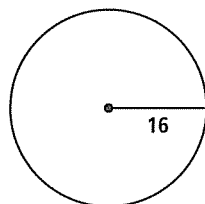
4. a. _____

b. _____



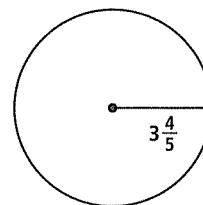
5. a. _____

b. _____



6. a. _____

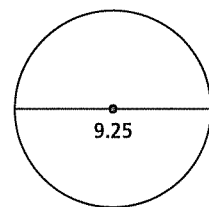
b. _____



In 7 and 8, for each circle, a. write the calculation needed to find the area, and b. find the area to the nearest tenth.

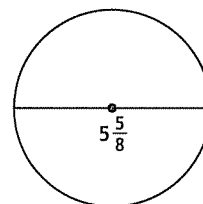
7. a. _____

b. _____



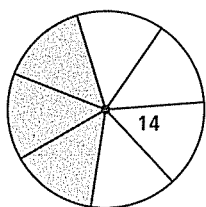
8. a. _____

b. _____

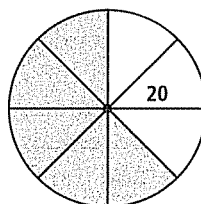


In 9 and 10, find the area of the shaded region of the given circle to the nearest tenth.

9. _____



10. _____



7-6B**PROPERTIES**

Objective F: Recognize the differences between perimeter and area.

11. Tell whether the situation requires determining circumference or area.

a. distance traveled by an orbiting spacecraft _____

b. waist size of a pair of pants _____

c. amount of paint needed to paint the top of a circular platform _____

d. amount of lawn watered by a rotating sprinkler with a ten-foot spray _____

e. probability of throwing a bean bag through a hole _____

f. amount of fencing needed for a circular garden _____

12. A circle has a circumference of 18π . Find its exact area. _____

13. A student has an old round end table with a badly scratched tabletop. She wants to completely cover the tabletop with a piece of self-stick plastic sheeting. She also wants to add a ribbon trim completely around the edge of the tabletop. What does she need to calculate for each part of this project and what formula should she use to make the calculation?

USES

Objective I: Find the area and circumference of a circle in real-world situations.

14. A round track used by runners has a diameter of 140 feet. If runners want to run one mile (5,280 feet), about how many times do they need to run completely around the track? _____

15. A circular tablecloth has a radius of 3.5 ft. It is laid over a circular table with a radius of 3 ft. What is the area of the part that hangs over the edge of the table? _____

16. On a quarter-mile track, the straight parts are each 110 yards long. The curved ends are semicircles, also 110 yards long along the innermost rim. What is the diameter of the semicircle on each end? _____

17. A circular frame with a 48-inch diameter is being shipped in a square box with sides 49 inches. Plastic foam is cut to fit the extra space between the edges of the box and the frame. How many square inches of plastic foam are needed? Round to the nearest tenth. _____

7-7A Lesson Master

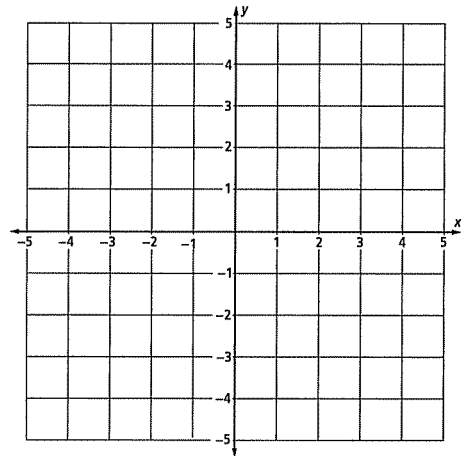
Questions on SPUR Objectives
See pages 480–483 for objectives.

USES Objective J

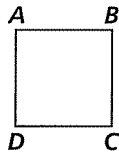
1. A miniature dollhouse chair 2 inches tall is $\frac{1}{15}$ the actual size of the original antique chair. How tall is the original chair? _____
2. How much is a 15% tip on a \$42 bill? _____
3. A consumer might pay only $\frac{3}{5}$ the regular retail price of a piece of furniture at an outlet store. How much might a dining-room table priced at \$1200 retail cost at the outlet store? _____
4. Bill enlarged his favorite 4-inch tall photo to a poster size of 30 inches in height. How many times the photo height is the poster height? _____

REPRESENTATIONS Objective M

5. a. On a grid, graph the triangle with vertices $(-2, 2)$, $(5, 3)$, and $(0, -4)$ and its image under a size change of magnitude 0.6.
 b. Is this an expansion or contraction?



6. a. Draw a square with side length three times the length of a side of $ABCD$.



- b. How does the area of the image compare with the area of $ABCD$?

7-7B

USES Objective J: Apply the Size-Change Model for Multiplication in real-world situations.

1. A rectangular picture 6 inches wide is to be reduced to fit in a space 5 inches wide for a newsletter.
 - a. How does the size of the new picture compare with the old picture?
 - b. What percent should a copy machine be set to reduce the picture (to the nearest percent)?

a. _____ b. _____

2. A picture 4 in. wide is to be enlarged to fit a 5 in. wide space for printing in the newsletter.
 - a. How does the new picture compare with the old picture?
 - b. What percent should a copy machine be set to enlarge the picture to the nearest percent?

a. _____ b. _____

3. A birthday dinner is held at a certain restaurant. Since there are more than 10 people in the group, the server's tip is automatically added to the bill. If the restaurant charges an 18% tip, how much is added to the initial bill of \$290? _____

4. A sports store is going out of business. The price of all equipment in the store is reduced by 70%. Before the sale, the price of a movable basketball set was \$420.00.
 - a. If you buy this basketball set, how much money will you save because of the sale?
 - b. What is the cost of the basketball set during the sale?

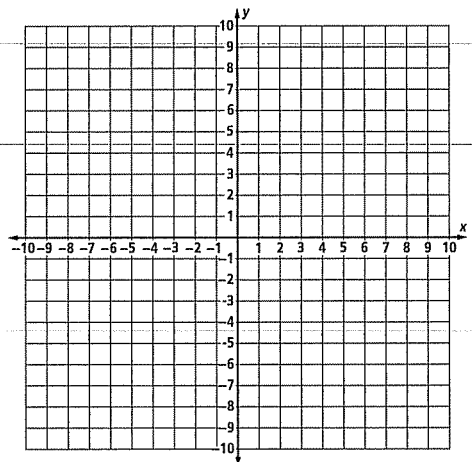
a. _____ b. _____

REPRESENTATIONS Objective M: Perform expansions or contractions on a coordinate graph.

5. What is the name of an image when it is under a size change of greater than 1? _____

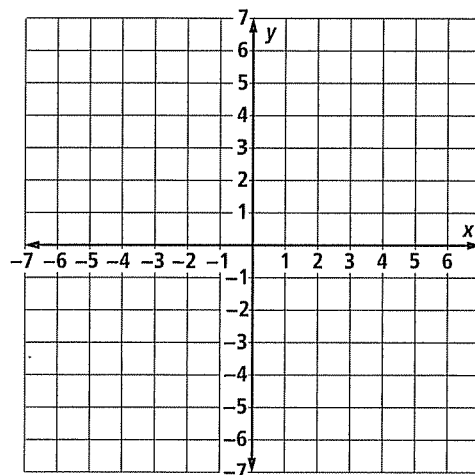
6. What is the name of an image when it is under a size change of less than 1? _____

7. On the grid at the right, graph the quadrilateral with vertices (5, 5), (5, -5), (-5, -5), and (-5, 5) and its image under a size change of magnitude $\frac{3}{5}$.

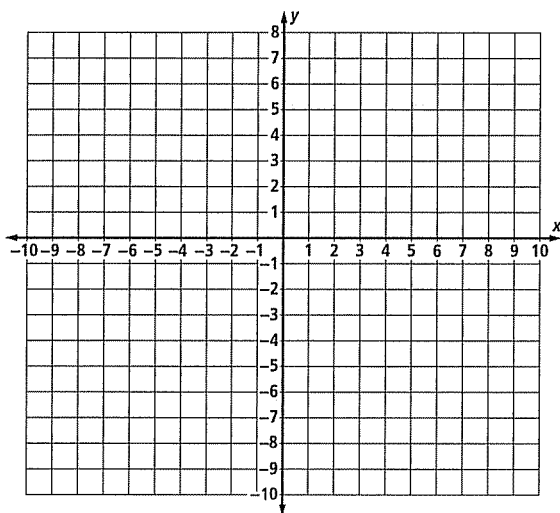


7-7B

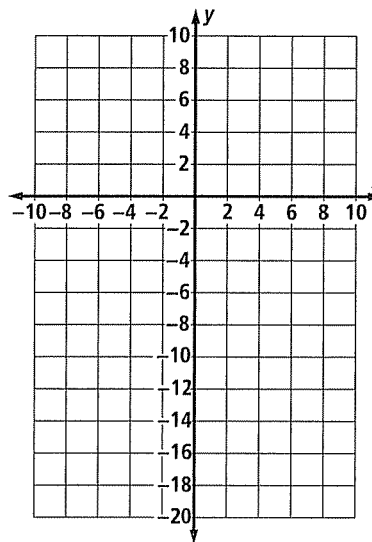
8. On the grid at the right, graph the quadrilateral with vertices $(4, 4)$, $(5, -3)$, $(-2, -5)$, and $(-4, 3)$ and its image under a size change of magnitude 0.4.



9. On the grid below, graph the quadrilateral with vertices $(2, 3)$, $(2, -4)$, $(-2, -2)$ and $(-2, 3)$ and its image under a size change of magnitude 2.4.



10. On a grid, graph the quadrilateral with vertices $(2, 1)$, $(2, -2)$, $(-2, -3)$ and $(-2, 2)$ and its image under a size change of magnitude $3\frac{3}{4}$.



8-1A Lesson Master

Questions on SPUR Objectives
See pages 549–551 for objectives.

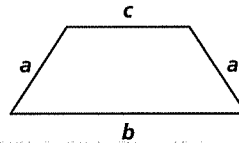
PROPERTIES Objective D

- Write $4t$ as a repeated addition. _____
- Write $u + u + u + u + u + u + u$ as a product. _____
- Simplify $\frac{1}{2} + 1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$. _____
- Simplify $r + r + r + r$. _____
- Identify the coefficients in the expression: $3x - 5y + z$. _____

In 6–8, a. identify like terms. b. Simplify the expression.

- $6s + 3t + 9t + s$ a. _____ b. _____
- $8v - 3v - 5u + 2v$ a. _____ b. _____
- $6m + 3m - 5m - m + m$ a. _____ b. _____

9. Give a formula in simplest form for the perimeter of the quadrilateral at the right.



10. a. Explain how the Repeated Addition Property of Multiplication can be used to simplify $3x + 6x$.

- b. Will your explanation in Part a work for $3x + 6y$? Explain your answer.

11. The phrase *multiplicative identity* refers to what number?

12. Give three different instances of expressions that can be used in a multiplication problem that are equivalent to the number 1, the Multiplicative Identity.
