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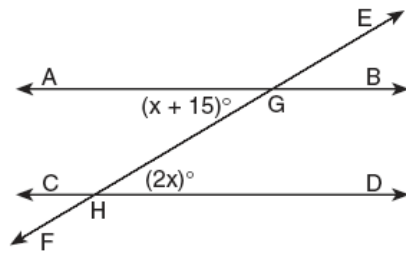
# Angles

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1

In the accompanying diagram, parallel lines  $AB$  and  $CD$  are intersected by transversal  $EF$  at points  $G$  and  $H$ , respectively,  $m\angle AGH = x + 15$ , and  $m\angle GHD = 2x$ .

Which equation can be used to find the value of  $x$ ?



- a.  $2x = x + 15$
- b.  $2x + x + 15 = 180$
- c.  $2x + x + 15 = 90$
- d.  $2x(x + 15) = 0$

(New York Department of Education)

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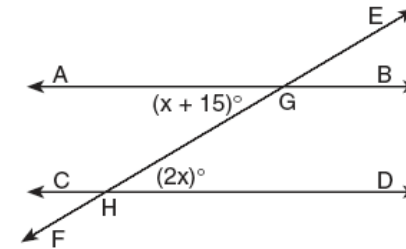
# Angles

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2

In the accompanying diagram, parallel lines  $AB$  and  $CD$  are intersected by transversal  $EF$  at points  $G$  and  $H$ , respectively,  $m\angle AGH = x + 15$ , and  $m\angle GHD = 2x$ .

What is the  $m\angle AGH$ ?



- a.  $180^\circ$
- b.  $30^\circ$
- c.  $60^\circ$
- d.  $15^\circ$

(Adapted from the New York Department of Education)

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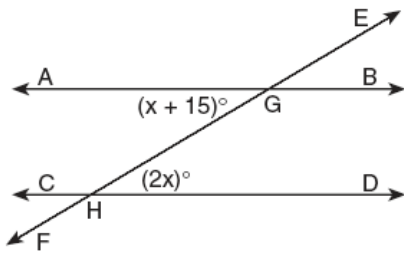
# Angles

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3

In the accompanying diagram, parallel lines  $AB$  and  $CD$  are intersected by transversal  $EF$  at points  $G$  and  $H$ , respectively,  $m\angle AGH = x + 15$ , and  $m\angle GHD = 2x$ .

What is the  $m\angle FGB$ ?



- a.  $180^\circ$
- b.  $150^\circ$
- c.  $60^\circ$
- d.  $15^\circ$

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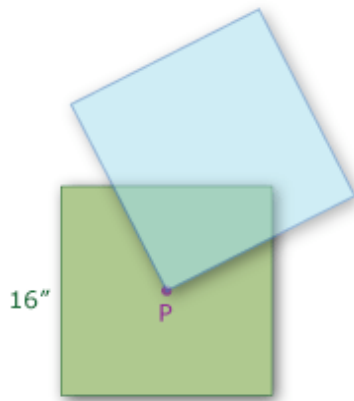
## Areas

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1

Let  $P$  be the center of a  $16'' \times 16''$  square as well as a vertex of another  $16'' \times 16''$  square that pivots freely around  $P$ .

What is the largest possible value for the area where these two squares overlap?



- a. 32 square inches
- b. 56 square inches
- c. 64 square inches
- d. 72 square inches

(from <http://mathforum.org/geopow/>)

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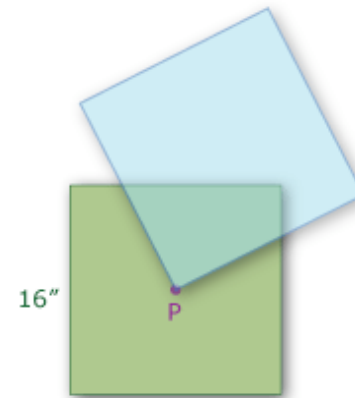
## Areas

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2

Let  $P$  be the center of a  $16'' \times 16''$  square as well as a vertex of another  $16'' \times 16''$  square that pivots freely around  $P$ .

What is the smallest possible value for the area where these two squares overlap?



- a. 32 square inches
- b. 56 square inches
- c. 64 square inches
- d. 72 square inches

(Adapted from <http://mathforum.org/geopow/>)

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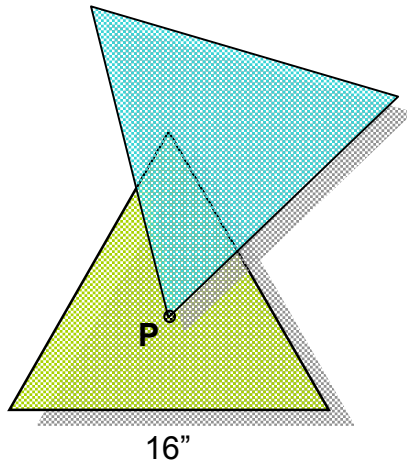
## Areas

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3

Let  $P$  be the center of an equilateral triangle with a side length of 16" as well as a vertex of another 16" equilateral triangle that pivots freely around  $P$ .

What is the largest possible value for the area where these two triangles overlap?



- a. 6.16 square inches
- b. 12.36 square inches
- c. 18.48 square inches
- d. 24.64 square inches

(Adapted from <http://mathforum.org/geopow/>)

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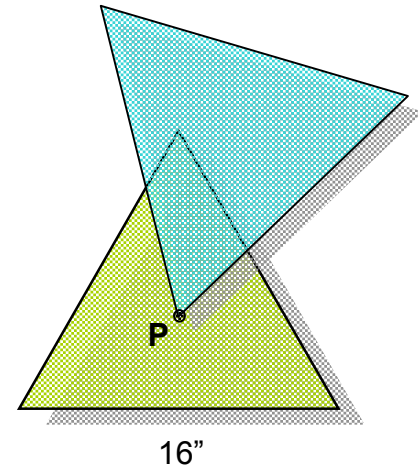
## Areas

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4

Let  $P$  be the center of an equilateral triangle with a side length of 16" as well as a vertex of another 16" equilateral triangle that pivots freely around  $P$ .

What is the smallest possible value for the area where these two triangles overlap?



- a. 6.16 square inches
- b. 12.36 square inches
- c. 18.48 square inches
- d. 24.64 square inches

(Adapted from <http://mathforum.org/geopow/>)

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## Rate Plans

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1

Karl needs to have his car towed to a repair shop. He received the following estimates for towing.

Company	Rate
Best Towing	\$ 32 plus \$2.00 per mile
Ace Towing	\$ 26 plus \$2.50 per mile
Bert's Towing	\$ 50 for 0 – 20 miles \$100 for 21 – 50 miles

If the distance to the repair shop is 35 miles, what is the least amount he could pay for towing?

- a. \$70.00
- b. \$82.50
- c. \$100.00
- d. \$102.00

(Maine Department of Education)

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## Rate Plans

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2

Karl needs to have his car towed to a repair shop. He received the following estimates for towing.

Company	Rate
Best Towing	\$ 32 plus \$2.00 per mile
Ace Towing	\$ 26 plus \$2.50 per mile
Bert's Towing	\$ 50 for 0 – 20 miles \$100 for 21 – 50 miles

If the distance to the repair shop is 30 miles, what is the least amount he could pay for towing?

- a. \$50.00
- b. \$101.00
- c. \$100.00
- d. \$92.00

(Adapted from Maine Department of Education)

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## Rate Plans

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### 3

Karl has a cell phone plan with Vary-I-Zone for 400 anytime minutes. This month he talked 450 minutes within his calling area. He's thinking about changing to a different company.

If he had a plan from one of the other two companies, what is the most amount of money he could have saved this month?

Company	Rate
<i>Vary-I-Zone</i>	<ul style="list-style-type: none"><li>• \$39.95 per month—includes 400 anytime minutes</li><li>• plus \$0.45 for each additional minute</li></ul>
<i>Sing-U-Air</i>	<ul style="list-style-type: none"><li>• \$51.24 per month—includes 600 anytime minutes</li><li>• plus \$0.40 for each additional minute</li></ul>
<i>Next-To-Nell</i>	<ul style="list-style-type: none"><li>• \$45.99 per month—includes 500 anytime minutes</li><li>• plus \$0.45 for each additional minute</li></ul>

- a. \$6.04
- b. \$11.21
- c. \$11.29
- d. \$16.46

(Adapted from Maine Department of Education)

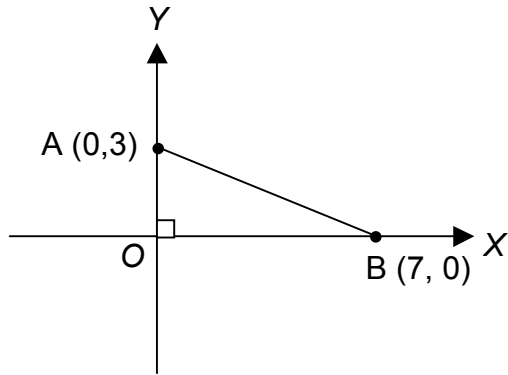
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## Rotating Shapes

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1

If this triangle is rotated  $360^\circ$  about the **x-axis**, which of the following will result?



- a. cone with diameter of 6
- b. cone with diameter of 14
- c. circle with diameter of 6
- d. circle with diameter of 14

*(Pennsylvania Department of Education)*

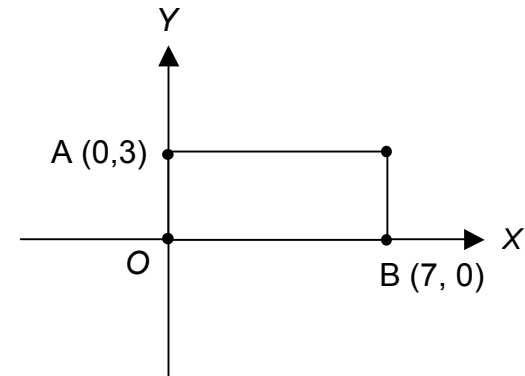
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## Rotating Shapes

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2

If this rectangle is rotated  $360^\circ$  about the **x-axis**, which of the following will result?



- a. cylinder with diameter of 6
- b. cylinder with diameter of 14
- c. circle with diameter of 6
- d. circle with diameter of 6

*(Adapted from Pennsylvania Department of Education)*

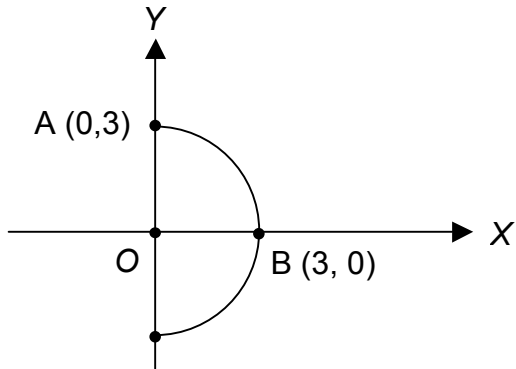
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## Rotating Shapes

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3

If this semi-circle is rotated  $360^\circ$  about the **y-axis**, which of the following will result?



- a. cylinder with diameter of 3
- b. cylinder with diameter of 6
- c. sphere with diameter of 3
- d. sphere with diameter of 6

*(Adapted from Pennsylvania Department of Education)*