

Washington State Math Championship 2008
Geometry Test - Grade 5

**Give an exact answer or one rounded to the nearest thousandth
unless otherwise directed.**

1. If a rectangle's length and width are both doubled, by what percent is the rectangle's area increased?
2. If one angle of a parallelogram is 40 degrees more than another angle, what is the degree measure of the smaller angle?
3. An isosceles triangle has one side length of 23 cm and the other two sides are each n cm, and n is an integer. What is the smallest possible value for n ?
4. A coordinate system has the numbers on the x -axis and y -axis marked one centimeter apart. A trapezoid has vertices at $(0, 0)$, $(0, 5)$, $(8, 5)$, and $(12, 0)$. What is the area of this trapezoid, in square centimeters?
5. The vertices of a quadrilateral $ABCD$ are $A(3, 1)$, $B(1, -4)$, $C(-6, 0)$, and $D(-3, 7)$. If quadrilateral $ABCD$ is translated 2 units up and 5 units to the right to create quadrilateral $A'B'C'D'$, what are the coordinates of vertex C' ?
6. At a construction site, some workers are rolling a large spool of cable. If the spool is a cylinder with a diameter of 48 inches, how many yards will it roll in 12 revolutions along a smooth surface? **Give an exact answer.**
7. Suppose you have two blocks of wood and both are right rectangular prisms. The first measures 18 cm high and has a volume of 330 cm^3 . The second is half as tall, but twice as long and twice as wide as the first block. How much more volume does the second block of wood have, in cubic centimeters?
8. Suppose you have two different pieces of wood and both are right rectangular prisms. One piece of wood measures 3 cm by 4 cm by 5 cm. The other is piece is similar to the first piece, and its shortest edge measures 9 cm. What is the total surface area of the larger piece of wood, in square centimeters?
9. The measures of the interior angles of a hexagon are $3x$, $6x$, $4x-6$, $2x-16$, $6x+2$, and $6x-16$. What is the measure, in degrees, of the largest angle?
10. A square is circumscribed about a circle. What is the ratio of the area of the circle to the area of the square? **Give an exact answer.**

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10. A square is circumscribed about a circle. What is the ratio of the area of the circle to the area of the square? **Give an exact answer.**

Washington State Math Championship 2008
Geometry Test - Grade 6

**Give an exact answer or one rounded to the nearest thousandth
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1. If a rectangle's length and width are both doubled, by what percent is the rectangle's area increased?
2. If one angle of a parallelogram is 40 degrees more than another angle, what is the degree measure of the smaller angle?
3. An isosceles triangle has one side length of 23 cm and the other two sides are each n cm, and n is an integer. What is the smallest possible value for n ?
4. A coordinate system has the numbers on the x -axis and y -axis marked one centimeter apart. A trapezoid has vertices at $(0, 0)$, $(0, 5)$, $(8, 5)$, and $(12, 0)$. What is the area of this trapezoid, in square centimeters?
5. The vertices of a quadrilateral $ABCD$ are $A(3, 1)$, $B(1, -4)$, $C(-6, 0)$, and $D(-3, 7)$. If quadrilateral $ABCD$ is translated 2 units up and 5 units to the right to create quadrilateral $A'B'C'D'$, what are the coordinates of vertex C' ?
6. At a construction site, some workers are rolling a large spool of cable. If the spool is a cylinder with a diameter of 48 inches, how many **yards** will it roll in 12 revolutions along a smooth surface? **Give an exact answer.**
7. Suppose you have two blocks of wood and both are right rectangular prisms. The first measures 18 cm high and has a volume of 330 cm^3 . The second is half as tall, but twice as long and twice as wide as the first block. How much more volume does the second block of wood have, in cubic centimeters?
8. Suppose you have two different pieces of wood and both are right rectangular prisms. One piece of wood measures 3 cm by 4 cm by 5 cm. The other piece is similar to the first piece, and its shortest edge measures 9 cm. What is the total surface area of the larger piece of wood, in square centimeters?
9. The measures of the interior angles of a hexagon are $3x$, $6x$, $4x-6$, $2x-16$, $6x+2$, and $6x-16$. What is the measure, in degrees, of the largest angle?
10. A square is circumscribed about a circle. What is the ratio of the area of the circle to the area of the square? **Give an exact answer.**

Washington State Math Championship 2008
Geometry Test - Grade 7

**Give an exact answer or one rounded to the nearest thousandth
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1. At a construction site, some workers are rolling a large spool of cable. If the spool is a cylinder with a diameter of 48 inches, how many **yards** will it roll in 12 revolutions along a smooth surface? **Give an exact answer.**
2. Suppose you have two blocks of wood and both are right rectangular prisms. The first measures 18 cm high and has a volume of 330 cm^3 . The second is half as tall, but twice as long and twice as wide as the first block. How much more volume does the second block of wood have, in cubic centimeters?
3. Suppose you have two different pieces of wood and both are right rectangular prisms. One piece of wood measures 3 cm by 4 cm by 5 cm. The other piece is similar to the first piece, and the shortest edge measures 9 cm. What is the total surface area of the larger piece of wood, in square centimeters?
4. The measures of the interior angles of a hexagon are $3x$, $6x$, $4x-6$, $2x-16$, $6x+2$, and $6x-16$. What is the measure, in degrees, of the largest angle?
5. A square is circumscribed about a circle. What is the ratio of the area of the circle to the area of the square? **Give an exact answer.**
6. A line passes through the points $(-2, 10)$ and $(4, -8)$. If the equation for this line is written in the form $y = mx + b$, then what is b ?
7. One furlong is $\frac{1}{8}$ of a mile, or 660 feet. A rectangular field is going to have topsoil added to make a garden, and this topsoil is sold in loads of 10 cubic yards each. The field has a width of 82 feet 6 inches, and a length of 1 furlong, 30 feet, and 6 inches. If the topsoil will be 6 inches deep, what is the smallest whole number of loads of topsoil that must be purchased for this field?
8. The areas of three faces of a right rectangular prism are 48 cm^2 , 96 cm^2 , and 72 cm^2 . What is the volume of the prism, in cm^3 ?

9. Some friends wanted to order a pizza and these were their choices:

Size of pizza	Small	Medium	Large	Extra-Large
Number of slices	6	6	8	12
Diameter, in inches	12	16	20	24
Price, in dollars	8	12	16	24

As they thought about their options, they decided to buy the best deal, as measured in square inches of pizza per dollar. Which pizza size should they order: small, medium, large, or extra-large?

10. What is the area of a right triangle, in cm^2 , if one leg is half the other leg and the hypotenuse is 10 cm?

Washington State Math Championship 2008
Geometry Test - Grade 8

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1. At a construction site, some workers are rolling a large spool of cable. If the spool is a cylinder with a diameter of 48 inches, how many **yards** will it roll in 12 revolutions along a smooth surface? **Give an exact answer.**
 2. Suppose you have two blocks of wood and both are right rectangular prisms. The first measures 18 cm high and has a volume of 330 cm^3 . The second is half as tall, but twice as long and twice as wide as the first block. How much more volume does the second block of wood have, in cubic centimeters?
 3. Suppose you have two different pieces of wood and both are right rectangular prisms. One piece of wood measures 3 cm by 4 cm by 5 cm. The other is similar to the first piece, and its shortest edge measures 9 cm. What is the total surface area of the larger piece of wood, in square centimeters?
 4. The measures of the interior angles of a hexagon are $3x$, $6x$, $4x-6$, $2x-16$, $6x+2$, and $6x-16$. What is the measure, in degrees, of the largest angle?
 5. A square is circumscribed about a circle. What is the ratio of the area of the circle to the area of the square? **Give an exact answer.**
 6. A line passes through the points $(-2, 10)$ and $(4, -8)$. If the equation for this line is written in the form $y = mx + b$, then what is b ?
 7. One furlong is $\frac{1}{8}$ of a mile, or 660 feet. A rectangular field is going to have topsoil added to make a garden, and this topsoil is sold in loads of 10 cubic yards each. The field has a width of 82 feet 6 inches, and a length of 1 furlong, 30 feet, and 6 inches. If the topsoil will be 6 inches deep, what is the smallest whole number of loads that must be purchased for this field?
 8. The areas of three faces of a right rectangular prism are 48 cm^2 , 96 cm^2 , and 72 cm^2 . What is the volume of this prism, in cm^3 ?
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9. Some friends wanted to order a pizza and these were their choices:

Size of pizza	Small	Medium	Large	Extra-Large
Number of slices	6	6	8	12
Diameter, in inches	12	16	20	24
Price, in dollars	8	12	16	24

As they thought about their options, they decided to buy the best deal, as measured in square inches of pizza per dollar. Which pizza size should they order: small, medium, large, or extra-large?

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