



THE B.E.S.T. STANDARDS

Benchmarks for Excellent Student Thinking



Geometry

Sample Test Materials

The purpose of these sample test materials is to orient teachers and students to the types of paper-based B.E.S.T. Geometry questions. By using these materials, students will become familiar with the types of items and response formats they may see on a paper-based test. The sample items and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test. The sample test materials are not intended to guide classroom instruction.

All trademarks and trade names found in this publication are the property of their respective owners and are not associated with the publishers of this publication.

Directions for Completing the Response Grids

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
 - Write your answer with the first digit in the left answer box OR with the last digit in the right answer box.
 - Write only one digit or symbol in each answer box. Do NOT leave a blank answer box in the middle of an answer.
 - Be sure to write a decimal point, negative sign, or fraction bar in the answer box if it is a part of the answer.
3. Fill in a bubble under each box in which you wrote your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.

-	-	-	-	-	-	-	-
/	/	/	/	/	/	/	/
.
0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

} Answer boxes
} Negative sign
} Fraction bar
} Decimal point
} Number bubbles

When a percent is required to answer a question, do NOT convert the percent to its decimal or fractional equivalent. Grid in the percent value without the % symbol. Do the same with dollar amounts.

-	1	1				
●	-	-	-	-	-	-
/	/	/	/	/	/	/
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	●	●	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

		-	6	.	7	8
-	-	●	-	-	-	-
/	/	/	/	/	/	/
•	•	•	•	●	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	●	6	6	6
7	7	7	7	7	●	7
8	8	8	8	8	8	●
9	9	9	9	9	9	9

2	5	.	3			
-	-	-	-	-	-	-
/	/	/	/	/	/	/
•	•	●	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	●	2	2	2	2	2
3	3	3	●	3	3	3
4	4	4	4	4	4	4
5	●	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

				1	3	6
-	-	-	-	-	-	-
/	/	/	/	/	/	/
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	●	1	1
2	2	2	2	2	2	2
3	3	3	3	3	●	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	●
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

Do NOT write a mixed number, such as $13\frac{1}{4}$, in the answer boxes.

Change the mixed number to an equivalent fraction, such as $\frac{53}{4}$, or to an

equivalent decimal, such as 13.25. Do not try to fill in $13\frac{1}{4}$, as it would be

read as $\frac{131}{4}$ and would be counted wrong.

CORRECT

INCORRECT

5	3	/	4			
-	-	-	-	-	-	-
/	●	/	/	/	/	/
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	●	3	3	3	3	3
4	4	4	●	4	4	4
●	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

OR

1	3	.	2	5		
-	-	-	-	-	-	-
/	/	/	/	/	/	/
•	•	●	•	•	•	•
0	0	0	0	0	0	0
1	●	1	1	1	1	1
2	2	2	●	2	2	2
3	●	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	●	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

1	3	1	/	4		
-	-	-	-	-	-	-
/	/	●	/	/	/	/
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	●	1	●	1	1	1
2	2	2	2	2	2	2
3	●	3	3	3	3	3
4	4	4	4	●	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

B.E.S.T. Geometry EOC Mathematics Reference Sheet

Customary Conversions

1 foot = 12 inches
 1 yard = 3 feet
 1 mile = 5,280 feet
 1 mile = 1,760 yards

1 cup = 8 fluid ounces
 1 pint = 2 cups
 1 quart = 2 pints
 1 gallon = 4 quarts

1 pound = 16 ounces
 1 ton = 2,000 pounds

Metric Conversions

1 meter = 100 centimeters
 1 meter = 1000 millimeters
 1 kilometer = 1000 meters
 1 liter = 1000 milliliters

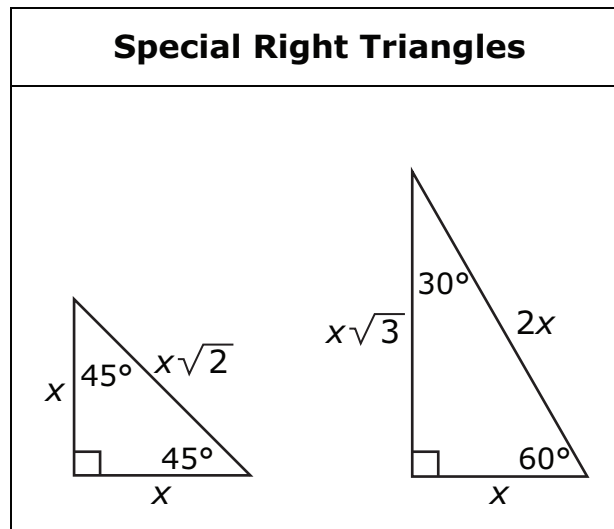
1 gram = 1000 milligrams
 1 kilogram = 1000 grams

Time Conversions

1 minute = 60 seconds
 1 hour = 60 minutes
 1 day = 24 hours
 1 year = 365 days
 1 year = 52 weeks

DO NOT REMOVE THIS SHEET

Distance Formula	Midpoint Formula	Slope Formula
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	$(x_M, y_M) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$	$m = \frac{y_2 - y_1}{x_2 - x_1}$



B.E.S.T. Geometry EOC Mathematics Reference Sheet

Formulas

Parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$
Circle	$C = 2\pi r$ or $C = \pi d$ $A = \pi r^2$
Regular Polygon	$A = \frac{1}{2}Pa$
Prism/Cylinder	$SA = 2B + Ph$ $V = Bh$
Cone	$SA = B + \pi r h_s$ or $SA = B + \pi r l$ $V = \frac{1}{3}Bh$
Regular Pyramid	$SA = B + \frac{1}{2}Ph_s$ or $SA = B + \frac{1}{2}Pl$ $V = \frac{1}{3}Bh$
Sphere	$SA = 4\pi r^2$ $V = \frac{4}{3}\pi r^3$

Key	
P = perimeter	A = area
a = apothem	C = circumference
h = height	SA = surface area
r = radius	V = volume
h_s = slant height	
l = slant height	
b = base	
d = diameter	
B = area of base	

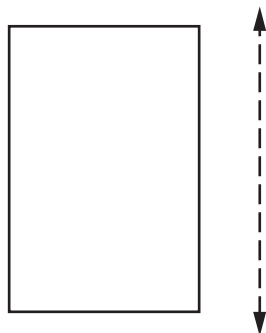
DO NOT REMOVE THIS SHEET

Trigonometric Ratios		
$\sin \theta = \frac{\textit{opposite}}{\textit{hypotenuse}}$	$\cos \theta = \frac{\textit{adjacent}}{\textit{hypotenuse}}$	$\tan \theta = \frac{\textit{opposite}}{\textit{adjacent}}$

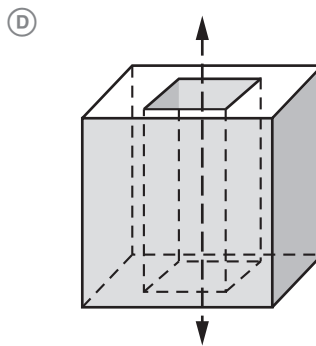
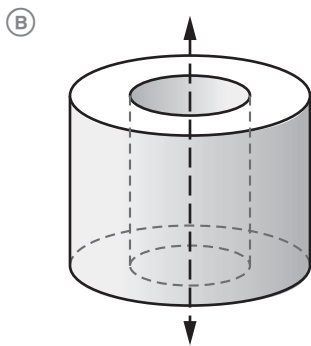
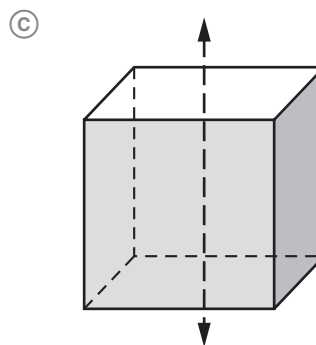
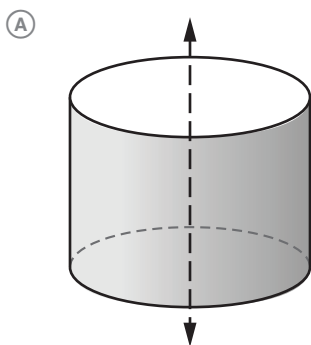
BLANK PAGE

Use the space in this Test and Answer Book to do your work. Then, completely fill in the bubble beside the answer you choose. For some items, filling in more than one bubble may be required. For items with response grids, follow the Directions for Completing the Response Grids on pages 3 and 4. If you change your answer, be sure to erase completely.

1. A rectangle and a vertical line are shown.

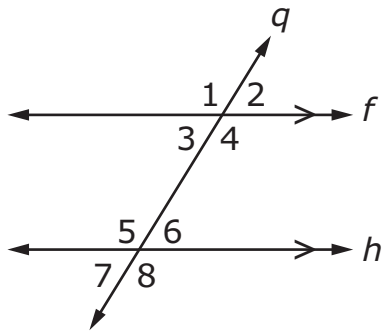


Which object is generated by rotating the rectangle about the vertical line?



B.E.S.T. Mathematics Sample Items

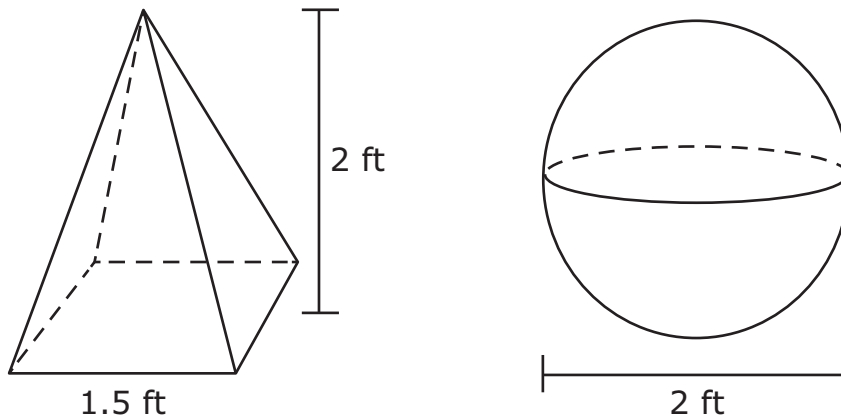
2. Lines f and h are parallel and intersected by line q , as shown.



Select statements and a reason to complete the proof showing $\angle 3 \cong \angle 6$. For each blank, fill in the bubble **before** the statement or word that is correct.

Statement	Reason
1. $f \parallel h$	1. Given
2. _____ [<input type="radio"/> A $\angle 1 \cong \angle 6$ <input type="radio"/> B $\angle 2 \cong \angle 6$ <input type="radio"/> C $\angle 5 \cong \angle 6$]	2. Corresponding angles of two parallel lines cut by a transversal are congruent.
3. _____ [<input type="radio"/> A $\angle 1 \cong \angle 3$ <input type="radio"/> B $\angle 2 \cong \angle 3$ <input type="radio"/> C $\angle 5 \cong \angle 3$]	3. Vertical angles are congruent.
4. $\angle 3 \cong \angle 6$	4. _____ [<input type="radio"/> A Reflexive <input type="radio"/> B Transitive <input type="radio"/> C Symmetric] property of congruence

3. A right square pyramid and a sphere are made of marble. The dimensions of each figure, in feet (ft), are shown.



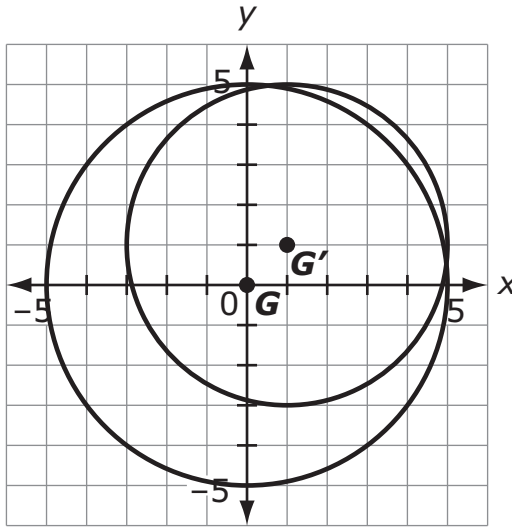
The density of marble is 160 pounds per cubic foot.

What is the difference, in pounds, between the weight of the sphere and the weight of the pyramid? Round your answer to the nearest hundredth.

-	-	-	-	-	-	-
/	/	/	/	/	/	/
.
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

B.E.S.T. Mathematics Sample Items

4. The preimage and image of a circle are shown.



The center of circle G is at $(0, 0)$, and the center of circle G' is at $(1, 1)$. The radius of circle G is 5 units, and the radius of circle G' is 4 units.

The sequence of transformations applied to circle G to create circle G' is shown.

- $(x, y) \rightarrow (cx, cy)$
- $(x, y) \rightarrow (x + d, y + d)$

What are the values of c and d ?

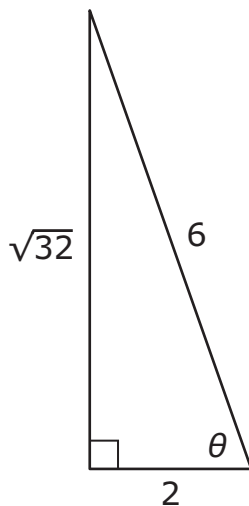
$c =$

-	-	-	-	-	-	-	-
/	/	/	/	/	/	/	/
.
0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

$d =$

-	-	-	-	-	-	-	-
/	/	/	/	/	/	/	/
.
0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

5. A figure is shown.

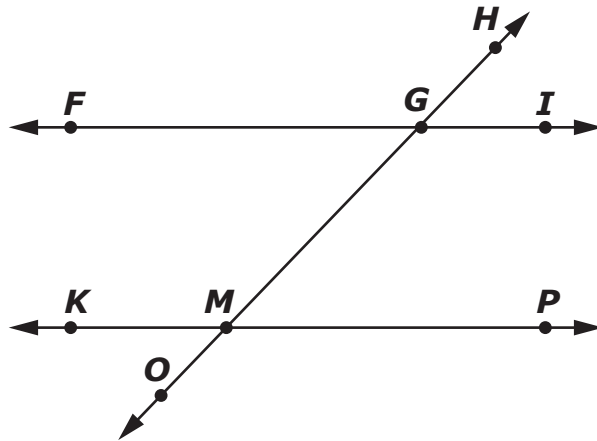


Select values to complete the trigonometric ratio. For each part of the ratio, fill in the bubble **before** the number that is correct.

$$\tan(\theta) = \frac{[\text{A } 2 \text{ B } \sqrt{32} \text{ C } 6]}{[\text{A } 2 \text{ B } \sqrt{32} \text{ C } 6]}$$

B.E.S.T. Mathematics Sample Items

6. A diagram is shown.



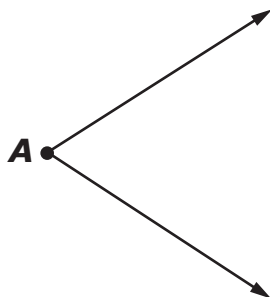
Kori uses the diagram to analyze the given statement.

“When a transversal intersects parallel lines, two angles are supplementary if and only if they are adjacent angles.”

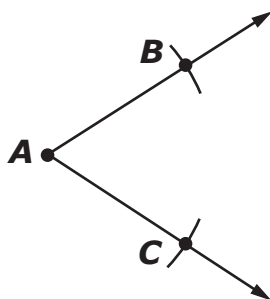
Fill in the bubble **before** one angle from each column to show a pair of angles that represents a counterexample.

Angle 1	Angle 2
(A) $\angle FGH$	(I) $\angle FGH$
(B) $\angle FGM$	(J) $\angle FGM$
(C) $\angle PMG$	(K) $\angle PMG$
(D) $\angle PMO$	(L) $\angle PMO$
(E) $\angle HGI$	(M) $\angle HGI$
(F) $\angle IGM$	(N) $\angle IGM$
(G) $\angle KMG$	(O) $\angle KMG$
(H) $\angle KMO$	(P) $\angle KMO$

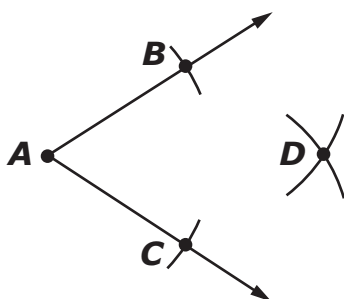
7. Angle A and two steps of a construction are shown.



Step 1: Place the compass at point A and draw arcs that intersect both rays. Label the intersections as points B and C , as shown.



Step 2: Using the same compass width from Step 1, draw intersecting arcs in the interior of the angle from points B and C . Label the intersection as point D , as shown.



B.E.S.T. Mathematics Sample Items

This question has **two** parts.

Part A

Select phrases to create a true statement. For each blank, fill in the bubble **before** the phrase that is correct.

Constructing \overline{AD} will create two congruent angles, _____
[A $\angle ABC$ and $\angle ACB$ B $\angle ABD$ and $\angle ACD$ C $\angle BAD$ and $\angle CAD$], because
 \overline{AD} is _____ [A a median B an incenter C an angle bisector].

Part B

Select all the lengths that are equivalent to AB .

- A AC
- B AD
- C BC
- D BD
- E CD

8. Angelo transforms rectangle $PQRS$ into rectangle $JKLM$. The corresponding sides of rectangles $PQRS$ and $JKLM$ are **not** congruent.

Select all the transformations that Angelo could have used.

- Ⓐ $(x, y) \rightarrow (y, x)$
- Ⓑ $(x, y) \rightarrow (3x, 3y)$
- Ⓒ $(x, y) \rightarrow (-y, x)$
- Ⓓ $(x, y) \rightarrow (1.5x, 1.5y)$
- Ⓔ $(x, y) \rightarrow (x - 2, y + 3)$

B.E.S.T. Mathematics Sample Items

9. Point $P(-1, 4)$ lies on line segment QR with endpoints $Q(1, 7)$ and $R(-9, -8)$.

Fill in bubbles to match each ratio of segment lengths to the correct numerical ratio.

	1:4	1:5	4:5
$QP:PR$	(A)	(B)	(C)
$QP:QR$	(D)	(E)	(F)



FLORIDA DEPARTMENT OF
EDUCATION
fldoe.org

Office of Assessment
Florida Department of Education, Tallahassee, Florida
Copyright © 2022 State of Florida, Department of State