

Ohio

Department
of Education

Ohio's State Tests

PRACTICE TEST

INTEGRATED
MATHEMATICS II

Student Name

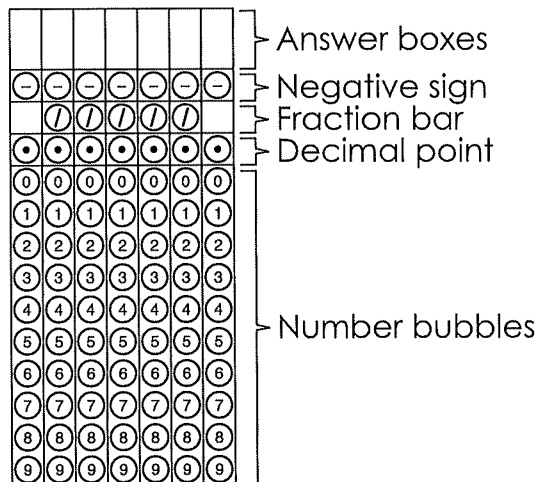
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Directions for Completing the Response Grids

1. Work the problem, and find an answer.
2. Write your answer in the answer boxes at the top of the grid in the **Answer Document**.
 - Write only one digit or symbol in each answer box.
 - 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 in the **Answer Document**.

- 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.





You can record a mixed number in several different ways. You can write it as:

a. A whole number and a fraction (15 1/2). Be sure to include a space between the whole number and the fraction.

1	5	1	/	2		
-	-	-	-	-	-	-
/	/	/	●	/		
●	●	●	●	●	●	●
0	0	0	0	0	0	0
●	1	1	●	1	1	1
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
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. An equivalent fraction (31/2)

3	1	/	2			
-	-	-	-	-	-	-
/	●	/	/	/		
●	●	●	●	●	●	●
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	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

c. An equivalent decimal (15.5)

1	5	.	5			
-	-	-	-	-	-	-
/	/	/	/	/		
●	●	●	●	●	●	●
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	3
4	4	4	4	4	4	4
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

Directions:

Today you will be taking the Ohio Integrated Mathematics II Practice Assessment.

There are several important things to remember:

1. Read each question carefully. Think about what is being asked. Look carefully at graphs or diagrams because they will help you understand the question. Then, choose or write the answer you think is best in your Answer Document.
2. Use only a #2 pencil to answer questions on this test.
3. For questions with bubbled responses, choose the correct answer and then fill in the circle with the appropriate letter in your Answer Document. Make sure the number of the question in this Student Test Booklet matches the number in your Answer Document. If you change your answer, make sure you erase your old answer completely. Do not cross out or make any marks on the other choices.
4. For questions with response boxes, write your answer neatly, clearly and only in the space provided in your Answer Document. Any responses written in your Student Test Booklet will not be scored. Make sure the number of the question in this Student Test Booklet matches the number in your Answer Document.
5. If you do not know the answer to a question, skip it and go on to the next question. If you have time, go back to the questions you skipped and try to answer them before turning in your Student Test Booklet and Answer Document.
6. Check over your work when you are finished.

1.

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2.

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3. Circle J is located in the first quadrant with center (a, b) and radius s . Felipe transforms Circle J to prove that it is similar to any circle centered at the origin with radius t .

Which sequence of transformations did Felipe use?

- A. Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{t}{s}$.
- B. Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{s}{t}$.
- C. Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{t}{s}$.
- D. Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{s}{t}$.



4.

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5. Francisco asks the students in his school what pets they have. He studies the events shown.

- Event S : The student has a cat.
- Event T : The student has a dog.

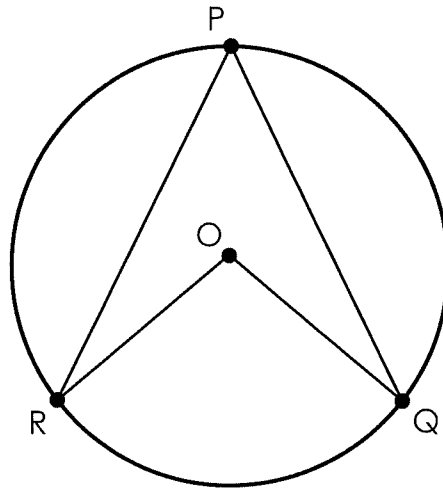
Francisco finds that the two events are independent.

In the **Answer Document**, select all the equations that must be true for events S and T .

- A. $P(S | T) = P(S)$
- B. $P(S | T) = P(T)$
- C. $P(T | S) = P(S)$
- D. $P(T | S) = P(T)$
- E. $P(S \cup T) = P(S) \cdot P(T)$
- F. $P(S \cap T) = P(S) \cdot P(T)$

Integrated Math II—Part 1

6. A teacher draws circle O , $\angle RPQ$ and $\angle ROQ$, as shown.



The teacher asks students to select the correct claim about the relationship between $m\angle RPQ$ and $m\angle ROQ$.

- Claim 1: The measure of $\angle RPQ$ is equal to the measure of $\angle ROQ$.
- Claim 2: The measure of $\angle ROQ$ is twice the measure of $\angle RPQ$.

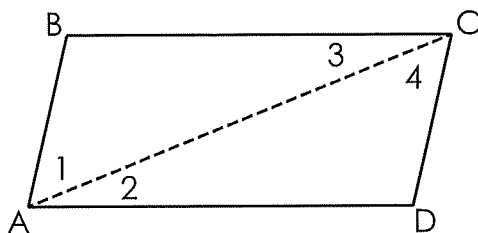
Which claim is correct? Justify your answer.

Write your answer in the **Answer Document**.

7.

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8. The proof shows that opposite angles of a parallelogram are congruent.



Given: ABCD is a parallelogram with diagonal \overline{AC} .

Prove: $\angle BAD \cong \angle DCB$

Proof:

Statements	Reasons
ABCD is a parallelogram with diagonal \overline{AC} .	Given
$\overline{AB} \parallel \overline{CD}$ and $\overline{AD} \parallel \overline{BC}$	Definition of parallelogram
$\angle 2 \cong \angle 3$ $\angle 1 \cong \angle 4$	Alternate interior angles are congruent.
$m\angle 2 = m\angle 3$ and $m\angle 1 = m\angle 4$	Measures of congruent angles are equal.
$m\angle 1 + m\angle 2 = m\angle 4 + m\angle 2$	Addition property of equality
$m\angle 1 + m\angle 2 = m\angle 4 + m\angle 3$?
$m\angle 1 + m\angle 2 = m\angle BAD$ $m\angle 3 + m\angle 4 = m\angle DCB$	Angle addition postulate
$m\angle BAD = m\angle DCB$	Substitution
$\angle BAD \cong \angle DCB$	Angles are congruent when their measures are equal.

What is the missing reason in this partial proof?

- A. ASA
- B. Substitution
- C. Angle addition postulate
- D. Alternate interior angles are congruent.

9.

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10.

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11. Kyle performs a transformation on a triangle. The resulting triangle is similar but not congruent to the original triangle.

Which transformation did Kyle perform on the triangle?

- A. dilation
- B. reflection
- C. rotation
- D. translation

12. Triangle ABC has vertices A(1, 1), B(2.5, 3), and C(0, -3). It is dilated by a scale factor of $\frac{1}{2}$ about the origin to create triangle A'B'C'.

What is the length, in units, of side $\overline{B'C'}$?

Complete the response grid in the **Answer Document**.

13.

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14.

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15.

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16.

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17. Sam is picking fruit from a basket that contains many different kinds of fruit.

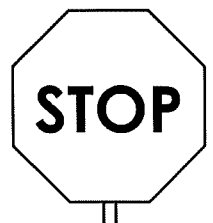
Which set of events is independent?

- A. Event 1: He picks a kiwi and eats it.
Event 2: He picks an apple and eats it.
- B. Event 1: He picks an apple and eats it.
Event 2: He picks an apple and eats it.
- C. Event 1: He picks a kiwi and eats it.
Event 2: He picks a kiwi and puts it back.
- D. Event 1: He picks a kiwi and puts it back.
Event 2: He picks an apple and puts it back.

18. The probability of flipping a fair coin and heads landing face up is 0.5. The probability of rolling a fair number cube, with sides numbered 1 through 6, and an odd number landing face up is 0.5.

What is the probability of flipping heads or rolling an odd number?

Complete the response grid in the **Answer Document**.



Do not go on

Do not go on

1.

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2. Which expression is equivalent to $(2x^2 + 3)(x + 4)$?

A. $2x^3 + 12$

B. $2x^2 + 11x + 12$

C. $2x^3 + 6x^2 + 4x + 12$

D. $2x^3 + 8x^2 + 3x + 12$

3. In the **Answer Document**, select all of the expressions that are equivalent to $9x^4 - y^2$.

A. $(3x^2 - y)^2$

B. $(3x^2)^2 - (y)^2$

C. $9(x^2)^2 - (y)^2$

D. $(9x^2)^2 - (y)^2$

E. $(3x^2 + y)(3x^2 - y)$

4.

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5. A grasshopper jumps off of a tree stump. The height, in feet, of the grasshopper above the ground after t seconds is modeled by the function shown.

$$h(t) = -t^2 + \frac{4}{3}t + \frac{1}{4}$$

After how many seconds will the grasshopper land on the ground?

Complete the response grid in the **Answer Document**.

6. An equation of a function $y(t)$ is shown.

$$y(t) = -t^2 + 14t - 40$$

In the **Answer Document**, select all of the statements that are true about the graph of $y(t)$ for $6 \leq t \leq 8$.

- A. The value of $y(t)$ increases over the interval $6 \leq t \leq 7$.
- B. The value of $y(t)$ increases over the interval $7 \leq t \leq 8$.
- C. The average rate of change over the interval $6 \leq t \leq 8$ is 0.
- D. The value of $y(t)$ is constant over the interval $6 \leq t \leq 8$.
- E. The average rate of change over the interval $6 \leq t \leq 7$ is the same as the average rate of change over the interval $7 \leq t \leq 8$.

7. Which expression is equivalent to $(8x^3)^{\frac{2}{3}}$?
- A. $4x^2$
 - B. $4x^3$
 - C. $\sqrt{8x^9}$
 - D. $\sqrt{(8x^3)^3}$
8. Line segment AC has endpoints A(-1, -3.5) and C(5, -1).
Point B is on line segment AC and is located at (0.2, -3).
What is the ratio of $\frac{AB}{BC}$?
- Complete the response grid in the **Answer Document**.

9. A function is shown.

$$f(x) = 5(x - 2)^2 + 3$$

What is the minimum value of the function?

Complete the response grid in the **Answer Document**.

10. The expression shown is equivalent to the expression $a + bi$.

$$(9 + 3i)(4 - 2i) - 42$$

What are the values of a and b ?

Complete the response grids in the **Answer Document**.

11.

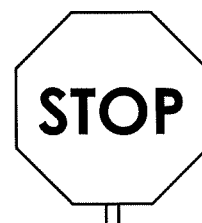
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12.

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13.

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Ohio State Test Reference Sheet High School

1 foot = 12 inches

1 yard = 3 feet

1 mile = 1,760 yards

1 mile = 5,280 feet

1 mile \approx 1.609 kilometers

1 inch = 2.54 centimeters

1 kilometer \approx 0.62 mile1 meter \approx 39.37 inches

1 pound = 16 ounces

1 pound \approx 0.454 kilograms1 kilogram \approx 2.2 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon \approx 3.785 liters1 liter \approx 0.264 gallons

1 liter = 1000 cubic centimeters

Trigonometry		
$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$		
$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$		
$\tan A = \frac{\text{opposite}}{\text{adjacent}}$		

Key			
$b = \text{base}$	$B = \text{area of base}$	$h = \text{height}$	$r = \text{radius}$

Triangle	$A = \frac{1}{2} b h$
Parallelogram	$A = b h$
Circle	$C = 2 \pi r$ $A = \pi r^2$

General Prisms	$V = B h$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3} \pi r^3$
Cone	$V = \frac{1}{3} \pi r^2 h$
Pyramid	$V = \frac{1}{3} B h$

Distance Formula	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Addition Rule	$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$