

11



Select all the statements that are true about  $\frac{22}{7}$ .

- It is a rational number.
- It is an irrational number.
- When it is written as a decimal, it terminates.
- When it is written as a decimal, it repeats.
- It is an approximate value of pi.
- When it is written as a decimal, it is equivalent to 3.10.



Name: \_\_\_\_\_

## AzMerit Practice

Course 3

12

An equation is shown.

$$a^b = c$$

Both  $a$  and  $c$  are less than 0, and  $b$  is a positive integer.

State another fact that must be true about  $b$ . Give a complete statement to explain your reasoning.

Type your answer in the space provided.

### Natural Language (Open Response)

Backspace CE C ANS

|     |                |                   |   |   |   |     |
|-----|----------------|-------------------|---|---|---|-----|
|     | (              | )                 | 7   | 8 | 9 | ÷   |
| STO | Sin            | sin <sup>-1</sup> | 4   | 5 | 6 | x   |
| RCL | Cos            | cos <sup>-1</sup> | 1   | 2 | 3 | √   |
|     | Tan            | tan <sup>-1</sup> | 0   | . |   | -   |
|     | e <sup>x</sup> | ln                |   |   |   | +/- |
|     | log            | n!                | <input checked="" type="radio"/> Degrees<br><input type="radio"/> Radians |   |   | +   |
|     | 1/x            | x <sup>y</sup>    |   |   | = |     |
|     | x <sup>2</sup> | x <sup>3</sup>    |   |   |   |     |
|     | π              | Abs               |   |   |   |     |

Name: \_\_\_\_\_

# AzMerit Practice

Course 3

### Multiple Choice

Backspace CE C ANS

|     |                |                   |   |   |   |
|-----|----------------|-------------------|---|---|---|
| STO | (              | )                 | 7 | 8 | 9 |
| RCL | Sin            | sin <sup>-1</sup> | 4 | 5 | 6 |
|     | Cos            | cos <sup>-1</sup> | 1 | 2 | 3 |
|     | Tan            | tan <sup>-1</sup> | 0 | . |   |
|     | e <sup>x</sup> | ln                |   |   |   |
|     | log            | n!                |   |   |   |
|     | 1/x            | x <sup>y</sup>    |   |   |   |
|     | x <sup>2</sup> | x <sup>3</sup>    |   |   |   |
|     | π              | Abs               |   |   |   |

Degrees  
 Radians

Name: \_\_\_\_\_

## AzMerit Practice

Course 3

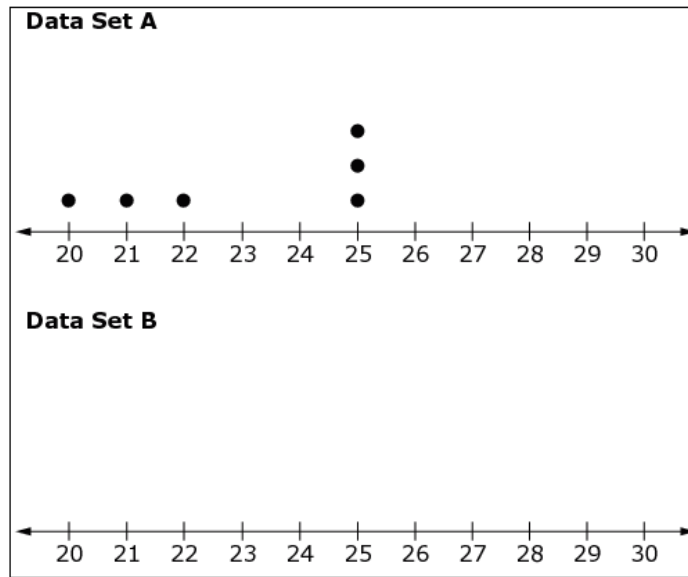
13



Data Set A is shown.

Data Set A and Data Set B have the same mean absolute deviation. Data Set B has 6 elements.

Create Data Set B so that the mean is 2 mean absolute deviations larger than the mean for Data Set A. Click above the number line to create this data set.



### Grid Item

Backspace CE C ANS

STO RCL

|                               |  |   |   |     |
|-------------------------------|--|---|---|-----|
| ( )                           | 7  | 8 | 9 | ÷   |
| Sin sin <sup>-1</sup>         | 4  | 5 | 6 | x   |
| Cos cos <sup>-1</sup>         | 1  | 2 | 3 | √   |
| Tan tan <sup>-1</sup>         | 0  | . |   | -   |
| e <sup>x</sup> ln             |  |   |   | +/- |
| log n!                        | <input checked="" type="radio"/> Degrees |   |   | +   |
| 1/x x <sup>y</sup>            | <input type="radio"/> Radians            |   |   | =   |
| x <sup>2</sup> x <sup>3</sup> |  |   |   |     |
| π Abs                         |  |   |   |     |

Name: \_\_\_\_\_

## AzMerit Practice

Course 3

14



Drag **one** set of absolute value symbols to the **right** side of each inequality to make the inequality true.

$$-4 \times 3 - 5^3 < -4 \times 3 - 5^3$$



$$-4 \times 3 - 5^3 > -4 \times 3 - 5^3$$



### Grid Item

The calculator interface includes a display area at the top, followed by a row of function keys: Backspace, CE, C, and ANS. Below this is a grid of mathematical function keys including STO, RCL, Sin, Cos, Tan, e^x, log, 1/x, x^2, π, sin^-1, cos^-1, tan^-1, ln, n!, x^y, and Abs. To the right of these keys is a numeric keypad with digits 0-9, a decimal point, and a fraction key. Further right are operation keys: ÷, ×, √, −, +/−, +, and =. At the bottom right, there are radio buttons for selecting between Degrees and Radians.

Name: \_\_\_\_\_

# AzMerit Practice

Course 3

15

The table shows the amount of money in Jody's bank account on certain days.

**Jody's Bank Account**

| Day ( <i>d</i> ) | Amount ( <i>a</i> ) |
|------------------|---------------------|
| 2                | \$ 83               |
| 5                | \$143               |
| 7                | \$183               |
| 11               | \$263               |
| 15               | \$343               |

Create an equation that models the relationship between the day, *d*, and the amount of money, *a*, in Jody's bank account.

← → ↶ ↷ ✖

|   |   |   |                           |                   |     |   |                  |                           |       |
|---|---|---|---------------------------|-------------------|-----|---|------------------|---------------------------|-------|
| 1 | 2 | 3 | <i>a</i>                  | <i>d</i>          |     |   |                  |                           |       |
| 4 | 5 | 6 | +                         | -                 | •   | ÷ |                  |                           |       |
| 7 | 8 | 9 | <                         | ≤                 | =   | ≥ | >                |                           |       |
| 0 | . | - | $\frac{\square}{\square}$ | $\square^\square$ | ( ) |   | $\sqrt{\square}$ | $\sqrt[\square]{\square}$ | $\pi$ |

### Equation

Backspace CE C ANS

|     |                |                   |   |   |   |                  |
|-----|----------------|-------------------|---|---|---|------------------|
| STO | (              | )                 | 7 | 8 | 9 | ÷                |
|     | Sin            | sin <sup>-1</sup> | 4 | 5 | 6 | x                |
| RCL | Cos            | cos <sup>-1</sup> | 1 | 2 | 3 | $\sqrt{\square}$ |
|     | Tan            | tan <sup>-1</sup> | 0 | . |   | -                |
|     | e <sup>x</sup> | ln                |   |   |   | +/-              |
|     | log            | n!                |   |   |   | +                |
|     | 1/x            | x <sup>y</sup>    |   |   |   | =                |
|     | x <sup>2</sup> | x <sup>3</sup>    |   |   |   |                  |
|     | $\pi$          | Abs               |   |   |   |                  |

Degrees  
 Radians

Name: \_\_\_\_\_

## AzMerit Practice

Course 3

16

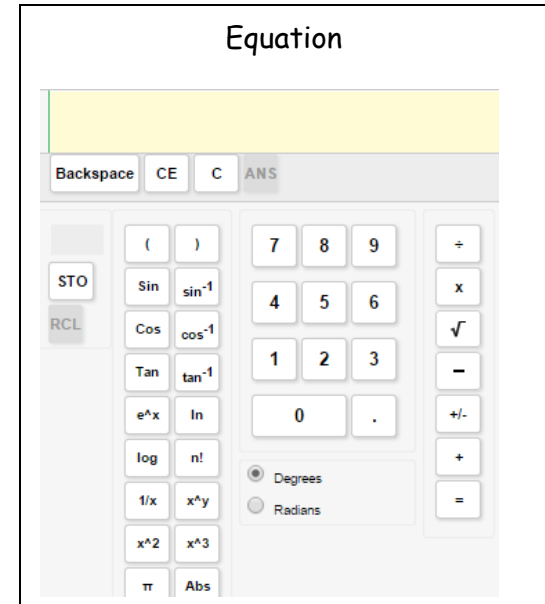


Consider the equation  $a^b = b^a$ , where  $a$  and  $b$  are two different whole numbers.

- What is the value of  $a$ ?
- What is the value of  $b$ ?

Enter each answer on a separate line.

|   |   |   |   |   |
|---|---|---|---|---|
| ← | → | ↶ | ↷ | ✖ |
| 1 | 2 | 3 |   |   |
| 4 | 5 | 6 |   |   |
| 7 | 8 | 9 |   |   |
| 0 | . | - |   |   |



Name: \_\_\_\_\_

## AzMerit Practice

Course 3

17



A system of equations is given.

$$7x + 2y = 25$$

$$2x + 2y = 10$$

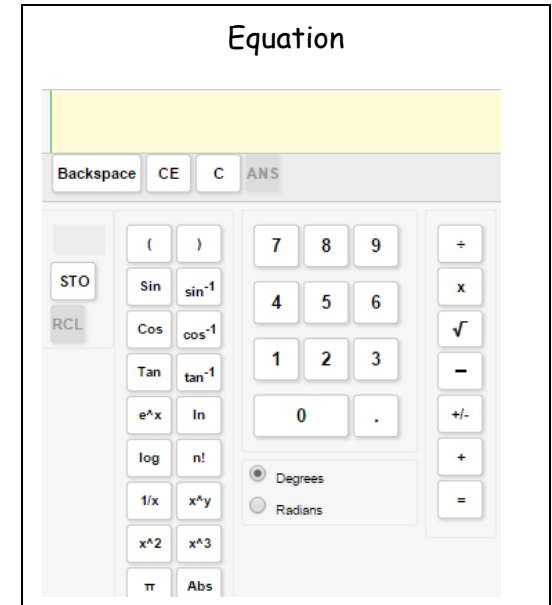
What are the values of  $x$  and  $y$  in the solution to the system?

$x =$

$y =$

← → ↶ ↷ ✖

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





Name: \_\_\_\_\_

## AzMerit Practice

Course 3

18



Fabiana asks 50 students at her school if they own a bike. She finds that more girls own bikes than boys. Complete the two-way table to show one possibility for Fabiana's results.

|       | Own a Bike | Do Not Own a Bike | Total |
|-------|------------|-------------------|-------|
| Boys  | 12         |                   | 25    |
| Girls |            |                   | 25    |
| Total |            |                   | 50    |

Table

The image shows a digital calculator interface. At the top, there is a yellow header bar. Below it, a table is displayed with the following content:

|       | Own a Bike | Do Not Own a Bike | Total |
|-------|------------|-------------------|-------|
| Boys  | 12         |                   | 25    |
| Girls |            |                   | 25    |
| Total |            |                   | 50    |

Below the table is a calculator keypad with various buttons:

- Backspace, CE, C, ANS
- STO, RCL
- Trigonometric functions: sin, sin<sup>-1</sup>, Cos, cos<sup>-1</sup>, Tan, tan<sup>-1</sup>
- Exponential functions: e<sup>x</sup>, ln
- Logarithmic functions: log, n!
- Power functions: 1/x, x<sup>y</sup>, x<sup>2</sup>, x<sup>3</sup>
- Constants: π, Abs
- Arithmetic operators: ÷, ×, √, -, +, =
- Other: 0, ., +/-, +, =
- Angle mode: Degrees (selected), Radians

Name: \_\_\_\_\_

19



Select one phrase that describes the sum or difference of each expression.

|               | <b>Greater than zero</b> | <b>Less than zero</b>    | <b>Equal to zero</b>     |
|---------------|--------------------------|--------------------------|--------------------------|
| $7 - (-7)$    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $7 + (-7)$    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $(-7) + (-7)$ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| $(-7) - 7$    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Matching

Backspace CE C ANS

STO RCL

( ) 7 8 9 ÷  
Sin sin<sup>-1</sup> 4 5 6 x  
Cos cos<sup>-1</sup> 1 2 3 √  
Tan tan<sup>-1</sup> 0 . -  
e<sup>x</sup> ln +  
log n! =  
1/x x<sup>y</sup> Degrees  
x<sup>2</sup> x<sup>3</sup> Radians  
π Abs