

























# Introduction TASK: Shapes, Systems, and Substitution




**Directions:** Find the value of each shape so that they will add up to give you the specified sums in each row and each column.

			Row sum = 46
			Row sum = 27
			Row sum = 32
			Row sum = 37
Column sum = 55	Column sum = 46	Column sum = 41	













 = \_\_\_\_  = \_\_\_\_  = \_\_\_\_

Question #1

			Row sum = 46
			Row sum = 18
			Row sum = 40
			Row sum = 54
Column sum = 60	Column sum = 52	Column sum = 46	

 = \_\_\_\_  = \_\_\_\_  = \_\_\_\_













Question #2

			Row sum = 38
			Row sum = 50
			Row sum = 48
			Row sum = 43
Column sum = 53	Column sum = 63	Column sum = 63	

 = \_\_\_\_  = \_\_\_\_  = \_\_\_\_













Question #3

Question #4

			Row sum = 56
			Row sum = 47
			Row sum = 55
			Row sum = 64
Column sum = 72	Column sum = 71	Column sum = 79	

 = \_\_\_\_  = \_\_\_\_  = \_\_\_\_

Question #5

			Row sum = 42
			Row sum = 18
			Row sum = 27
			Row sum = 30
Column sum = 50	Column sum = 32	Column sum = 35	

 = \_\_\_\_  = \_\_\_\_  = \_\_\_\_

Grade yourself along the following rubric

<b>Scored Discussions Rubric</b> Score yourself on the assigned categories between 1-4 1: Rarely 2: Sometimes 3: Often 4: Always		<b>Name:</b>
<b>Be Engaged</b>	<b>Conjecture Boldly</b>	<b>Task:</b>
		<b>One thing I did really well</b>
<b>Build on Other's Ideas</b>	<b>Disagree Respectfully</b>	<b>One thing I could work on for next time</b>
<b>Confusion is part of understanding</b>	<b>Helping is not the same as answering</b>	<b>My Overall Discussion Grade:</b>

# Math Problem Solving Sentence Starters

## Be Engaged

- Let's try this
- What's our strategy
- Let's try a different approach
- Let's keep working
- How should we start

## Conjecture Boldly

- I think...
- I wonder...
- What if....
- A wrong answer might be...
- A prediction of the answer might be...

## Build on Others' Ideas

- To summarize what \_\_\_\_\_ said, ....
- \_\_\_\_\_'s comment made me think
- I heard \_\_\_\_\_ idea and I'd add
- I like that idea, and I think...

## Disagree Respectfully

- I hear what you're saying, but I think....
- I thought about it differently...
- Something I'm wondering about your idea is....
- I disagree because...

## Confusion is part of understanding

- I understand.... But I don't understand...."
- Can you explain that..."
- Why....?
- Where did \_\_\_\_\_ come from?

## Helping is not the same as answering

- Tell me what you are thinking...
- Think about this example....
- How are you thinking about this problem?
- Look at it this way...
- What do you know?

## Fishbowl TASK 1:

(AMC 10B #16) Al, Bill, and Cal will each randomly be assigned a whole number from 1 to 10, inclusive, with no two of them getting the same number. What is the probability that Al's number will be a whole number multiple of Bill's and Bill's number will be a whole number multiple of Cal's.

- A)  $9/1000$
- B)  $1/90$
- C)  $1/80$
- D)  $1/72$
- E)  $2/121$

### Scored Discussions Rubric

Score yourself on the assigned categories between 1-4  
1: Rarely 2: Sometimes 3: Often 4: Always

<b>Be Engaged</b>	<b>Conjecture Boldly</b>
<b>Build on Other's Ideas</b>	<b>Disagree Respectfully</b>
<b>Confusion is part of understanding</b>	<b>Helping is not the same as answering</b>

*Sentence Starters for Norm to Focus On*

#### **Conjecture Boldly**

- I think...
- I wonder...
- What if....
- A wrong answer might be...
- A prediction of the answer might be...

#### **Confusion is Part of Understanding**

- I understand.... But I don't understand...."
- Can you explain that..."
- Why....?
- Where did \_\_\_\_\_ come from?

## Fishbowl TASK 2:

(AMC 10B #15) The town of Hamlet has 3 people for each horse, 4 sheep for each cow, and 3 ducks for each person. Which of the following could not possibly be the total number of people, horses, sheep, cows, and ducks in Hamlet?

- A) 41
- B) 47
- C) 59
- D) 61
- E) 66

<b>Scored Discussions Rubric</b> Score yourself on the assigned categories between 1-4 1: Rarely 2: Sometimes 3: Often 4: Always	
<b>Be Engaged</b>	<b>Conjecture Boldly</b>
<b>Build on Others' Ideas</b>	<b>Disagree Respectfully</b>
<b>Confusion is part of understanding</b>	<b>Helping is not the same as answering</b>

*Sentence Starters for Norm to Focus On*

### **Building on Others' Ideas**

- To summarize what \_\_\_\_\_ said, ....
- \_\_\_\_\_'s comment made me think
- I heard \_\_\_\_\_ idea and I'd add
- I like that idea, and I think...

### **Helping is not the same as answering**

- Tell me what you are thinking...
- Think about this example....
- How are you thinking about this problem?
- Look at it this way...
- What do you know?

# Background Reading

Resources	Notes
<b>How to Give Effective Feedback to Your Students</b> <i>By Susan M. Brookhart</i>	
<b>5 Practices for Orchestrating Productive Mathematics Discussions</b> <i>By Margaret Schwan Smith, Mary Kay Stein</i>	
<b>Strength in Numbers: Collaborative Learning in Secondary Mathematics</b> <i>by Ilana Horn</i>  Blogs at <a href="http://teachingmathculture.wordpress.com">teachingmathculture.wordpress.com</a>	
<b>"An Alternative Form of Evaluation that complies with NCTM's Standards,"</b> <i>Mathematics Teacher 85, no. 8 (1992)</i>	
<b>Scored Discussions</b> <i>Social Education (1992)</i> <i>By John Zola</i>	
<b>Powerful Problem Solving</b> <i>By Max Ray</i>	

## TASK Resources

Resources	Notes
<b>Tasks We've Used for Algebra II at EL Haynes Public Charter School</b> <a href="http://tinyurl.com/ELHA2Tasks">tinyurl.com/ELHA2Tasks</a>	
<b>MARS Tasks</b> <a href="http://map.mathshell.org">map.mathshell.org</a>	
<b>NRich Mathematics</b> <a href="http://nrich.maths.org">nrich.maths.org</a>	
<b>Illustrative Mathematics</b> <a href="http://illustrativemathematics.org">illustrativemathematics.org</a>	
<b>Engage NY</b> <a href="http://engageny.org">engageny.org</a>	
<b>New Zealand Maths</b> <a href="http://nzmaths.co.nz/">http://nzmaths.co.nz/</a>	