

TEACHER INSTRUCTIONS: Walk Through

The Teacher Instruction sheet is always your starting point!

Each Teacher Instruction sheet is organized in the same way, with four easy steps.

Over the next several slides, we will walk through a Teacher Instruction sheet.

Teacher Instructions:

Problem Scenario: "Emergency System"

The Main Problem: The school is considering a new "Emergency System" to alert students and people in the surrounding areas in case of an emergency. Students must decide what sort of Emergency System works best. What are the issues to consider, and what system will be most effective?

Your students will be viewing this problem from a **math** perspective.

Which alarm is best?

Students must consider the factors to make an Emergency System effective, such as purpose and cost.

Step 1 Review Stimulus Items

Stimulus Item #1 — Various alarm system infographic (students will compare the details of various alarm systems... this includes the purpose of each system, and the percentage of the budget that the system would require)

Stimulus Item #2 — Map of the school grounds (students will review the size and shape of the area that would need to be notified during an emergency)

Stimulus Item #2b — Grid Paper (to draw your own map)

***Students should take notes as they review the Stimulus Items.*

If time allows, students are encouraged to conduct their own research!

Step 2 Classroom Discussion

Lead a class discussion about issues related to the topic.

You are being provided a sheet to help you guide the classroom discussion.

Step 3 Student Response

***Students should have access to their notes as they enter their answers*

***Students may also have access to the Stimulus Items as they enter their answers*

Product Option: Divide your students into small groups. A couple of members of each group take on the role of "Alarm System Salesmen." The others become potential customers. The salesmen must try to sell different alarm systems (using the infographic provided) giving their opinion of which system will be best for the school. The potential customers must ask key questions regarding the price, purpose, and coverage area of each system.

Extended Response: Have students answer the following questions using the online assessment system. Remind students to use information from the Stimulus Items to support their response.

- 1) Based on the details and cost of the different alarm systems, what is the best way to notify everyone at your school during an emergency? Support your answer with details regarding cost and placement and arrangement of your school

Step 4 Analysis

Rubrics to grade student entries have been provided, and all questions have been mapped to the content standards. Results can be analyzed through the online system.

Top of the page:

Teacher Instructions:

Problem Scenario: "Emergency System"

The Main Problem: The school is considering a new "Emergency System" to alert students and parents in the event of a fire. The school is considering a new "Emergency System" to alert students and parents in the event of a fire. The school is considering a new "Emergency System" to alert students and parents in the event of a fire. The school is considering a new "Emergency System" to alert students and parents in the event of a fire.

Which alarm is best?

Students will be given 10 minutes to discuss the factors to make an Emergency System effective, such as position and range.

Step 1

Review

Students will be given 10 minutes to discuss the factors to make an Emergency System effective, such as position and range.

Step 2

Classroom Discussion

Students will be given 10 minutes to discuss the factors to make an Emergency System effective, such as position and range.

Step 3

Response

Students will be given 10 minutes to discuss the factors to make an Emergency System effective, such as position and range.

Step 4

Analysis

Students will be given 10 minutes to discuss the factors to make an Emergency System effective, such as position and range.

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Review

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Teacher Instructions:

Problem Scenario: *"Emergency System"*

The Main Problem: The school is considering a new "Emergency System" to alert students and people in the surrounding areas in case of an emergency. Students must decide what sort of Emergency System works best. What are the issues to consider, and what system will be most effective?

Your students will be viewing this problem from a **math** perspective.

Which alarm is best?
Students must consider the factors to make an Emergency System effective, such as purpose and cost.

TEACHER INSTRUCTIONS: Walk Through

Step 1 – Review Stimulus Items:

All Stimulus Items (videos, articles, infographics, etc.) are provided that provide information about the problem from the specific point-of-view (i.e. subject area):

What's the Task?		Alarm Options
Alarm Type: Entrance Monitors	Purpose: Security	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>
Alarm Type: Perimeter Detectors	Purpose: Security	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>
Alarm Type: Areas	Purpose: Multi-Purpose (e.g., fire, security)	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>
Alarm Type: Fire Alarm	Purpose: Fire Safety	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>
Alarm Type: Intrusion Alert	Purpose: Multi-Purpose	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>
Alarm Type: Vibration Alarm	Purpose: Multi-Purpose	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>
Alarm Type: Security Circuits	Purpose: Security	<p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>  <p>Best Description: This alarm system is designed to detect unauthorized entry into a building.</p>

Step 1

Review
Stimulus
Items

Stimulus Item #1 — Various alarm system infographic
(students will compare the details of various alarm systems... this includes the purpose of each system, and the percentage of the budget that the system would require)

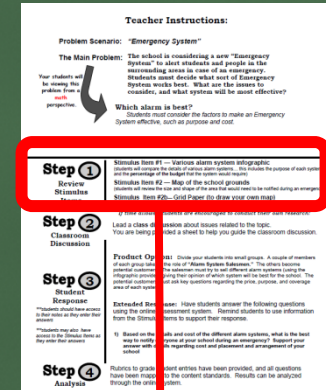
Stimulus Item #2 — Map of the school grounds
(students will review the size and shape of the area that would need to be notified during an emergency)

Stimulus Item #2b— Grid Paper (to draw your own map)

*"Students should take notes as they review the Stimulus Items.
If time allows, students are encouraged to conduct their own research!"*

NOTE: All stimulus items are provided for you. Students are also provided “**Thought-Gathering Sheets**” to help them keep track of the information.

Of course, if time allows, it is great for students to do their own research on the subject, although everything has been provided for them!



What's My Priority?

Alexis Priority Sheet

Action Steps	Reasons for Choosing	Potential All-Possible Outcomes

Notes:

"Allow students to seek information from a variety of sources."



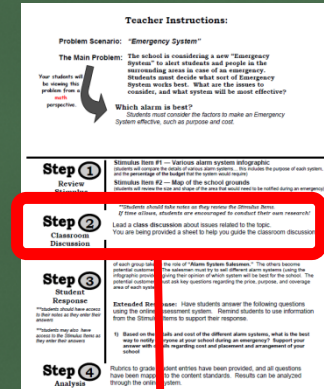
What kinds
of stimulus
items
are provided?

Websites
Pamphlets
Videos
Infographic
Blogs
Audio
Articles
Interviews
AND MORE

TEACHER INSTRUCTIONS: Walk Through

Step 2 – Classroom Discussion:

Bullet points to help teachers lead a classroom discussion are always provided.



Step 2 Classroom Discussion

Lead a class discussion about issues related to the topic.
You are being provided a sheet to help you guide the classroom discussion.

What's the Problem?

Questions for Classroom Discussion

Alarm — (Math)

How is math involved when making any purchase?

- What is the real costs of items you buy? (a printer actually continues to cost as you purchase ink, etc.) What math processes help you to decide costs?
- Consider why buying one item often means you can NOT buy something else. (opportunity costs)
- Why do people make budgets before making purchases? How would you begin to set up a budget? What things would you need to consider?

Why doesn't it make good money sense to install every type of alarm at the school?

- Why is cost called a "limiting factor" in making choices?
- What is the main purpose of an alarm system? Why would someone even consider putting more than one type of an alarm in the same school?
- Some "sacrifices" must be made to stay within a budget. What are some things to sacrifice for a better alarm system? (you could sacrifice the number of alarms, the sound, the possibility of frequent false alarms for a safer system, etc)

Why would the size and layout of a school matter when purchasing an alarm?

- Think back to what you know about how sound travels. Consider how this information is necessary to determine the type of alarm system needed.
- Why is the size and layout of the school critical factors in the cost of an alarm system?
- Consider why having all information is important before making this—or any—purchasing decision.

TEACHER INSTRUCTIONS: Walk Through

Step 3 – Student Response:

For each problem-based scenario, teachers are provided multiple options for how the students can respond.

Step ③ Student Response

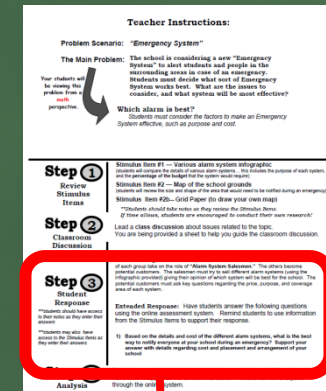
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Product Option: Divide your students into small groups. A couple of members of each group take on the role of “Alarm System Salesmen.” The others become potential customers. The salesmen must try to sell different alarm systems (using the infographic provided) giving their opinion of which system will be best for the school. The potential customers must ask key questions regarding the price, purpose, and coverage area of each system.

Extended Response: Have students answer the following questions using the online assessment system. Remind students to use information from the Stimulus Items to support their response.

- 1) Based on the details and cost of the different alarm systems, what is the best way to notify everyone at your school during an emergency? Support your answer with details regarding cost and placement and arrangement of your school



Product Option: This is an involved response that requires students to immerse themselves in the details of the problem and often collaborate with other students.

Extended Response: This is a written response to an open-ended question. It is most similar to what students may see on an end-of-year assessment.

"Have students respond with a 'product'"

Such as...

Bulletin board	Advertisement	Chart	Fairy tale
Letter	Cartoon	Pop-up book	Film
Comic strip	Play	Collage	Riddle
Debate	Clay sculpture	Timeline	Venn Diagram
Demonstration	Political Cartoon	Prototype	Brochure
Diary	Costumes	Crossword puzzle	Poem
Editorial Essay	Newspaper Article	Database	Rap song
Map	Diorama	Oral Report	Webpage
Lesson Plan	Display	Rebus Story	Role playing
Fiction story	Press Conference	Slide Show	Petition
Interview	Survey	Edibles	Game
Jingle	Campaign Platform	Experiment	Mosaic
Joke book	Flipbook	Fact tile	Slogan
Journal	Illustrated Story	Family tree	Radio Show



...just to name a few

TEACHER INSTRUCTIONS: Walk Through

Step 4 – Analysis:

While there is not a single “right” answer to the problem-based scenarios, it is still important for students to take the correct approach. Rubrics have been provided to help monitor this.

Step 4 Analysis

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Which alarm is best?
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Step 1
Survey
Students
Draw

Step 2
Classroom
Discussion

Step 3
Student
Response

Step 4
Analysis

What's the Problem?					
Student Response Rubrics					
Highlighted Standard: Content Standard - This standard will vary depending on the background knowledge required for the student response. The question items have been “mapped” to the appropriate standard for you to review.					
Score	4	3	2	1	NS
C O N T E N T A R E A	<p>Student demonstrates background knowledge, and maintains it consistently and purposefully throughout the response:</p> <ul style="list-style-type: none"> - background knowledge of a topic is clearly stated, focused, and strongly maintained - background knowledge of a topic is introduced and communicated clearly within the purpose, audience, and task 	<p>Student shows appropriate background knowledge of the subject:</p> <ul style="list-style-type: none"> - background knowledge of the topic is clear and mostly maintained, though some loosely related material may be present - overall background knowledge of the topic is adequate within the purpose, audience, and task 	<p>Student shows a somewhat sustained background knowledge of the subject:</p> <ul style="list-style-type: none"> - may include information that is correct and focused on the subject, but is insufficiently sustained - background knowledge frequently goes from correct or incorrect, causing response to be unclear and/or somewhat unfocused 	<p>Student shows very little background knowledge of the subject:</p> <ul style="list-style-type: none"> - may be very brief - may have a major factual error- focus may be confusing or ambiguous 	<p>Insufficient, illegible, in a language other than English, incoherent, off-topic, or off-purpose writing</p>

***Recording results through our online system will be covered in another slide show