

Explorations in the Newly Developed Common Core

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Common Core State Standards



- ❖ Educational standards to ensure students develop skills and knowledge necessary for success
- ❖ Forty-five state and the District of Columbia have adopted the Common Core State Standards
- ❖ Wisconsin adopted the CCSS in 2010 with full implementation and assessment in the 2014-15 school year.
- ❖ Goal to add depth to previous standards which were described as a "mile wide and inch deep"
- ❖ Rigor, Focus and Coherence are the leading principles
- ❖ Learning Progressions developed for topics that span grade levels

Sample Standards 'Unpacked'

- ❖ Start with a standard
- ❖ Provide clarifying language
- ❖ Tie to the Math Practices
- ❖ Task Examples
- ❖ Includes Instructional Expectations

<p>HSN.G.4 Derive the formula for the area of a trapezoid, rectangle, parallelogram, and square when the median is drawn. Use the formula to solve problems. For example, calculate mortgage payments.</p>	<p>HSN.G.4 Derive the formula for the area of a trapezoid, rectangle, parallelogram, and square when the median is drawn. Use the formula to solve problems. For example, calculate mortgage payments.</p>
<p>Instructional Expectations</p> <p>It is important to balance conceptual understanding and procedural fluency in work with algebraic expressions. For example, development of skill in factoring and completing the square goes hand-in-hand with understanding what different forms of a quadratic expression reveal. Also, consider extending finite geometric series to infinite geometric series for enrichment.</p> <p>In the mathematical practices, qualitative and exponential expressions are the focus in Algebra 1. The expectation in Algebra II is to extend to polynomial and rational expressions.</p> <p>In the Instructional pathway, CCSS Mathematics II focuses on qualitative and exponential expressions, while in CCSS Mathematics III the expectation is to extend to rational expressions.</p>	

Smarter Balanced Assessment Consortium

- ❖ Aligned with CCSS
- ❖ Computer based component
- ❖ Four types of tasks:
 - ❖ Selected-response items
 - ❖ Computer-Implemented Constructed Response Task Sequence
 - ❖ Constructed-response items
 - ❖ Extended constructed response
 - ❖ Performance Task



Used with previous WKCE

New additions

Depth of Knowledge

Item	Item Description	Depth of Knowledge Level
Item 1	...	Level 1
Item 2	...	Level 2
Item 3	...	Level 3
Item 4	...	Level 4

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Resources: <http://www.corestandards.org/> Common Core State Standards
<http://www.smarterbalanced.org/> Smarter Balance Assessment Consortium

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Standards for Mathematical Practice

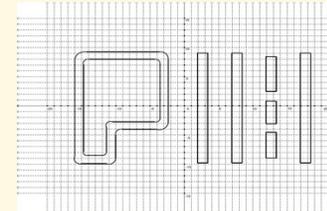


- ❖ Infused in every content standard
- ❖ Assessed formatively and summatively
- ❖ Assist students in developing the 'habit of mind' of a mathematician

Our Performance Task

You are in charge of security for a local department store. The store is doing well, but has been having an unacceptable amount of jewelry stolen. You cannot be sure if the thefts are being committed by employees or customers. Because of this, the store manager has charged you with revamping the security for that department. Lucky for you, the jewelry counter is in an open area of the store, so installing cameras on the ceiling will not create blind spots.

The counter is laid out as follows: The counter height is 48" and the average person's height is 66". The ceiling is 35'. Your goal is to purchase and set up the security system. You have four choices in security cameras. An optimum setup will have the entire area covered with as little overlap of camera coverage as possible.



Camera A is a color camera with optimum visual range of 15 feet. The radius of coverage at the optimum visual range is 5 feet. The image degrades along the following curve: where x is the distance beyond the optimum visual height and the probability that a person will be identified is $I(x)\%$. This camera costs \$290.72 to buy and will cost the company \$15.00 a month for maintenance and power.

Camera B is a black and white camera with optimum visual range of 13 feet. The radius of coverage at the optimum visual range is 5 feet. The image degrades along the following curve: where x is the distance above the optimum visual height and $I(x)$ is the percentage that a person will be identified. This camera costs \$245.36 and will cost the company \$15 a month for maintenance and power.

Camera C is a color camera with a wide angle lens. Optimum visual height is 10 feet and the radius of coverage at 10 feet is 8 feet. The image degrades along the following curve: where x is the distance above the optimum visual height and $I(x)$ is the percentage that a person will be identified. This camera costs \$300.00 and will cost the company \$17 a month for maintenance and power.

Camera D is a high definition color camera with an optimum visual height of 15 feet and a radius of coverage at the maximum visual height of 6.5 feet. The image degrades along the following curve: where x is the distance above the optimum visual height and $I(x)$ is the percentage that a person will be identified. This camera costs \$1,212.83 and costs \$5 a month for maintenance and power. (Bear in mind that the radius of visual range is proportional to the height of the camera, and to maintain the aesthetic of the store all of the cameras should be at the same height.)

Once you have chosen your camera(s), the next step is to set up monitoring for these camera(s). Security guards will cost the company \$8,550 a month per security guard. One security guard can monitor up to 4 cameras at a time without missing anything. For every camera over 4 that the guard watches, $I(x)$ decreases by 7% for all cameras the guard is watching. You also have two choices in monitors:

Monitor A is a standard definition monitor costing \$925.48. This decreases $I(x)$ for camera D by 5%.

Monitor B is a High Definition monitor costing \$1175.54. This monitor does not affect any of the cameras' effectiveness.

Diagram the camera setup and determine final cost for 1) purchasing the equipment and 2) maintaining the equipment per month. Explain why you believe you have set up a sufficient security system for the best price.