Math-in-CTE Lesson Plan Template

Lesson Title: Siding		Lesson # C 11
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Occupational Area:		
CTE Concept(s): Calculating exterior wall finish/Siding		
Math Concepts: area; square feet		
Lesson Objective:	Estimate the amount of wood horizontal siding required for a specific structure.	
Supplies Needed:		

THE "7 ELEMENTS"	TEACHER NOTES (and answer key)
1. Introduce the CTE lesson. **Ask students what they think they might be learning based on the video.** **Today we are going to learn how to estimate the amount of wood horizontal siding required for a specific structure.**	Show you tube video as hook. www.youtube.com/watch?v=VRv3YH3Y1lk

2. Assess students' math awareness as it relates to the CTE lesson.	Students will take Vocabulary/Calculation Notes…see attached C11-2 worksheet -Use C 11 Powerpoint.
Vocabulary to Introduce:	
Area of openings	Area of openings is the area of the windows and doors.
Gross Single Area	
Perimeter	Gross Single Area: height of the wall multiplied by the length of the wall
Gross Wall Area	
Factor	Perimeter: Addition of all sides of the exterior walls of a home.
Horizontal siding	
Exposure	Gross wall area is the height of the wall multiplied by the perimeter of the home, usually referred to as just Gross Area.
Lap	Factor: the overlap of beveled siding
You'll need to be able to calculate the following:	Horizontal siding: Wood siding in overlapping horizontal rows or "courses" is called clapboard.
Perimeter	Exposure: the amount of horizontal siding exposed to the elements
Gross Area	Lap: the amount of double coverage of material
Net Wall Area	
Siding needed	Gross Single Area: height * length
	Gross Area = (height * perimeter)
	Net wall area = gross area – area of openings

	Siding needed = net area * factor Show movies: www.youtube.com/watch?v=2vBpkgJBiZY (Area of rectangle) www.youtube.com/watch?FWWseOtSg2w (Area of triangle)
3. Work through the math example *embedded* in the CTE lesson. Lets look at some examples using these calculations. Explain to students the	**For finding the wood siding for a single wall, here is an example:** A shed wall is 10 ft by 12 ft with no openings. Using clapboard with a 1.45 factor, how much siding is needed to the nearest foot.. **Gross Single Area of wall 120 = (10 * 12)** **Siding Area 120 * 1.45 = 174 sq ft** **For finding the wood siding for a home, here is an example:** First, determine the net wall surface area by subtracting the areas of the openings from the gross wall area. For example, if the wall height is 8', the perimeter of the house is 140', and the door and window opening amount to 210 square feet, determine the net wall area. First calculate the Gross Area: Gross Area = (height * perimeter) Gross Area = (8' * 140') Gross Area = 1120' Next calculate the Net Area: Net Area = gross area – area of openings

	Net Area = 1120 – 210 Net Area = 910 square feet See Gross Area/Net Area Computing Worksheet #1 for more examples. Now, multiply the net area by the appropriate factor. If 1 x 6 rustic shiplapped siding is to be used, the factor is 1.19. Siding needed = net area * factor = 910 * 1.19 = 1083 Square Feet See Overlap Factor Handout for additional examples and factors.
4. Work through *related, contextual* math-in-CTE examples. Now lets look at an example of calculating the amount of siding needed on a gable side of a house. See C 11, part 4 worksheet.	See C 11, part 4 worksheet
5. Work through *traditional math* examples.	

In the math class, you may see examples such as the following:	Use worksheets found at following sites: Worksheet on rectangle/square: http://www.helpingwithmath.com/printables/worksheets/geo0601area03.htm Worksheet on triangle: http://karen.mcnabbs.org/worksheets/area_perimeter/area_triangles.pdf Game to demonstrate the understanding: http://www.aaastudy.com/geo.htm#topic12
6. Students demonstrate their understanding. Students will estimate/calculate the amount of siding needed to side a shed in the shop.	See attached template for students to complete.
7. Formal assessment.	At this point the students would take a written test. See C 11 Assessment.

NOTES: