

Lab Framework

Text: CORD Applied Math

Unit number and title: Unit # 6

Short Description: This lab will be used to brief students in the use of traditional drafting tools by drawing various lines and angles with basic equipment. Students afterward will learn to draw geometric shapes using lines and angles on the computer using computer aided drawing and design software. Afterward they can produce products using the CNC Laser.

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Lab Title

Drawing Lines and Angles with Traditional Drafting Equipment

Lab Plan

TEACHER: Teacher Prep/ Lesson Plan

Lab Objective

To have students learn about various types of lines and angles while also learning to use basic drafting equipment.

Statement of pre-requisite skills needed (i.e., vocabulary, measurement techniques, formulas, etc.)

Measurement skills, Drafting fundamental knowledge

Vocabulary

T-square, 30-60-90 Triangle, 45-45-90 Triangle, Protractor, Lines, Angles, Parallel, Perpendicular, Horizontal, Vertical

Materials List

T-square, drafting triangles, drafting paper, masking tape, protractors

State Standards addressed

Math: G.2.D - Describe the intersections of lines in the plane and in space, of lines and planes, and of planes in space.

Reading: 1.1 - Use word recognition skills and strategies to read and comprehend text.

2.1. Demonstrate evidence of reading comprehension.

3.1. Read to learn new information

Writing: 2.2. Writes for different purposes

Leadership Skills

Students will help each other as needed

SCAN Skills/Workplace Skills

Performs basic computations

C.Makes reasonable estimates without a calculator

Set-up information

Having sample sheets of what students will be doing. Show students what to expect for line quality as well as the angles and lines they will be drawing. Samples of varying grades of work help students to see what it takes to do a great job.

Lab organization(-Grouping/leadership opportunities/cooperative learning expectations; -Timeline required)

Leaders assigned to pass out and collect equipment used during activity.

Teacher Assessment of student learning (scoring guide, rubric)

Use drafting scoring rubric

Summary of learning (to be finished after student completes lab)
Review of all vocabulary; discussion about drafting and Computer aided drafting and design (C.A.D.D)

Optional activities

Have students do the same activity except by sketching the lines. Could be done with only a protractor if other drafting equipment is not available.

Career Applications

Drafting, CADD, Engineering, Designing, Architecture, Construction, Manufacturing

Washington

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<https://wa-appliedmath.org/>

LAB TITLE: Drawing lines and angles with drafting equipment

STUDENT Instructions:

Statement of problem addressed by lab

Draw lines as shown by the sample copy by using your drafting tools to produce the given angles. All lines in each quadrant should be drawn $1/2''$ apart and should be either parallel or perpendicular to each other as shown.

Grouping instructions and roles

Accomplished individually or if necessary with a partner.

Procedures – steps to follow/instructions

Carefully tape each corner of your drafting paper so that it is perfectly straight and aligned horizontally and vertically with your desk. (Watch teacher demo.)

Divide your paper in half vertically and horizontally with dividing lines. (Again watch teacher demo.)

Your paper should be divided into four equal rectangles. Draw different angled lines within each quadrant being sure to keep lines $1/2''$ away from each other and by keeping lines within each section parallel to each other. (Follow sample copy)

Carefully print your name and period number on the first line drawn parallel to the edge of your paper.

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Lab Data Collection

Student: _____ Date: _____

Unit: #6

Lab Title: Drawing lines and angles with drafting equipment.

Criteria: Write the problem/objective in statement form

To follow the directions for drawing lines and angles from the teacher led demonstrations and the sample worksheet handed out.

Data Collection: Record the collected/given data

Assignment completed on drafting paper sheet.

Calculations: Complete the given calculations to solve for an answer(s)

Angles are thought out before drawing the actual lines. Students will need to be able to draw angles needed by using one edge of the triangle or a combination of the two triangles combined with the T-square kept horizontal at all times. Angles other than in 15 degree intervals would need to be drawn using the protactor.

Summary Statement:

Other Assessment(s)

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