Name:_____ **Score:_____**

Drill Gage

Read Section 3, Unit 2, Pages 232-248. Answer the following questions or definitions.

Define the following:

1. Angle Plate

2. Center Head

3. Center Punch

4. Divider

5. Height Gage

6. Hermaphrodite caliper

7. Layout

8. Layout Flud (Layout Dye)

9. Layout Fluid Remover

10. Parallel

11. Plain Protractor

12. Prick Punch

Name:_____ **Score:_____**

13. Rule Holder

14. Scriber

15. Surface gage

16. Surface plate

17. Trammel

18. V-block

19. Vernier bevel protractor

Name:_____ **Score:_____**

Answer the following Questions:

20. What is the purpose for layout?

21. What is the purpose of Layout Fluid?

22. Describe two safety precautions you should observe when using layout dye.

23. Briefly explain how to use a scribe

24. What two angles can be laid out with the combination square?

25. What two tasks can a divider be used to perform?

26. What safety precautions should be observed when using layout tools that are used for scribing?

27. What would the divider setting be to scribe a ¾" diameter circle?

28. What would the divider setting be to scribe a 3/8" Radius?

29. What semi-precision layout tool is used to scribe a line parallel to an edge at a set distance?

30. Describe the use of a surface gage.

Name:_____ **Score:_____**

You will be making a drill gage.

Outcomes:

- Students will demonstrate proper setup and operation of mill
- Students will safely handle tools while working on equipment
- Students will layout a part
- Students will drill holes to a specified size and location
- Students will properly use a bandsaw to profile the part
- Students will use tools to profile, finish and stamp the finished part

Make sure to stamp your initials on the back of the part.

Project Grading -- You will be graded in the following areas

- Within specifications
- Quality of part
- Organization
- Working with others

The areas below will be graded up to the points given. Students will self grade and the instructor will grade.

Area	**Student Grade**	**Peer Grade**	**Instructor Grade**
Job Plan (10pts)			
Safety (10pts)			
Layout (5pts)			
Drilling (5pts)			
Filing or part cleanup (5pts)			
Working with others (5pts)			
Cleanup (10pts)			
Total			

If you need help be sure to ask!

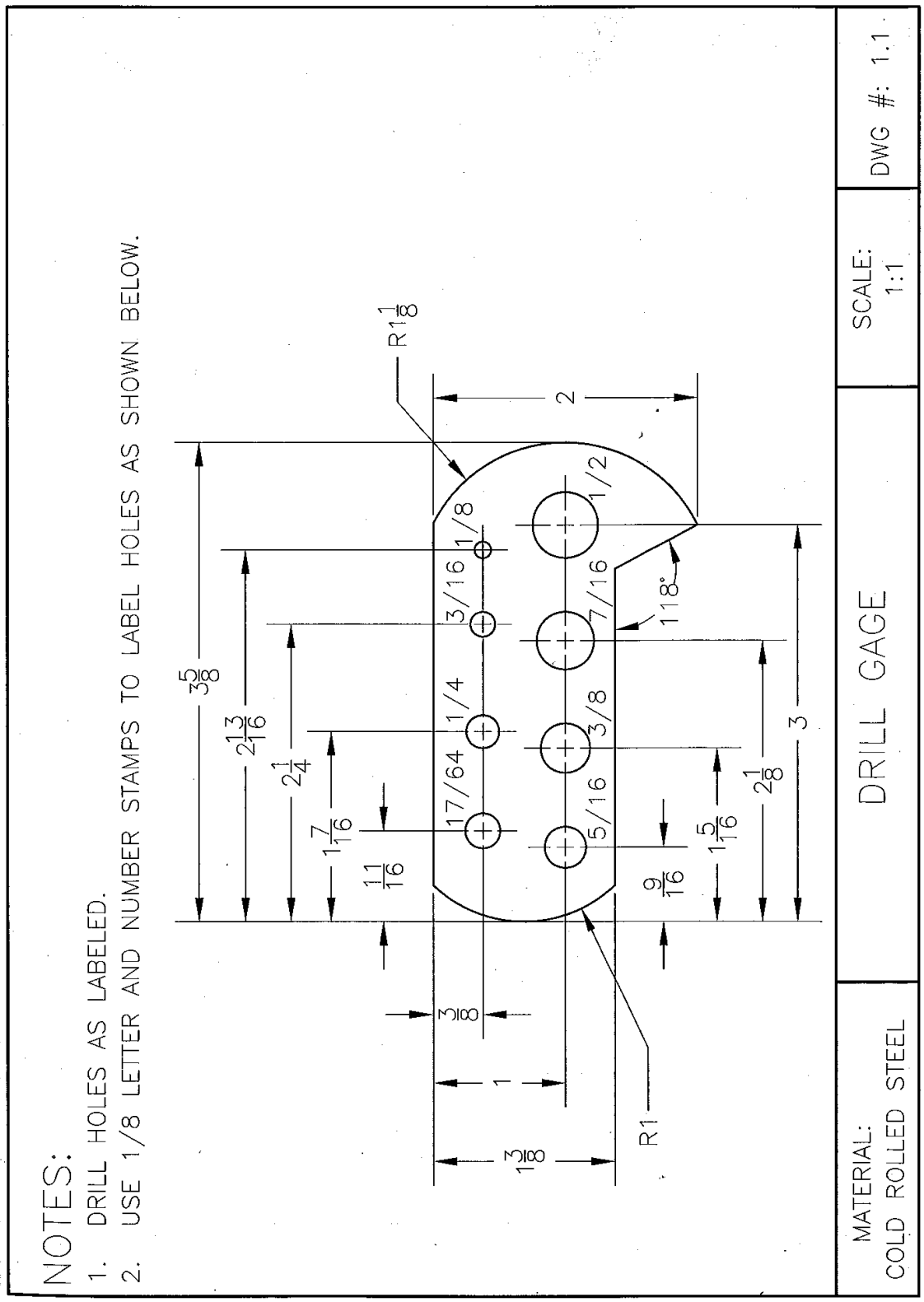
Name:_____ **Score:**_____

Order of Operations

4.1, 12.1–12.6	❑	1. Cut appropriate stock 1/8" longer than the finished length.
5.2, 6.8	❑	2. Using files, a precision square, and appropriate technique, square one end of the workpiece with one edge. Use a permanent marker to mark the good end and good edge.
5.1	❑	3. Coat the front of the workpiece with layout dye. Be sure to have the good end and the good edge marked on the backside of the piece for reference.
4.1, 5.1, 5.4	❑	4. With a combination square, dividers, protractor, and scriber, lay out all hole locations, angles, radii, and edges. Remember to take all measurements from the good end and the good edge.
10.6, 10.9	❑	5. Use a wiggler/center finder to accurately locate the centers of the holes, and then drill the holes with the correct drill bits. Be sure to deburr each hole (especially on the back) so the workpiece is safe to handle.
12.3, 12.4, 12.6	❑	6. Using a vertical band saw, cut away the excess material from the workpiece. Cut about 1/16" *outside* the layout lines so there is enough material to ensure that all saw marks are removed when file finishing.
6.8	❑	7. Using both straight filing and draw filing techniques, file the workpiece to the specified shape. Be careful to keep all corners sharp and all edges square with the body of the piece. Keep in mind that the finished piece should look *exactly* like the drawing.
	❑	8. Stamp hole sizes beside each hole.
6.11	❑	9. Using appropriate abrasives and polishing technique, polish the drill gage to a mirror finish on both sides and all edges.

Note At a later date, the drill gage can be set up in the vertical mill and, using a carbide burr, the graduations along the cutting lip angle can be cut every 1/64" or 1/32" as desired.

Name:_____ **Score:**_____


NOTES:
1. DRILL HOLES AS LABELED.
2. USE 1/8 LETTER AND NUMBER STAMPS TO LABEL HOLES AS SHOWN BELOW.
DRILL GAGE
SCALE: 1:1
DWG #: 1.1
MATERIAL: COLD ROLLED STEEL
R1 1/8
2
1/2
1/8
3/16
7/16
118°
1/4
3/8
17/64
5/16
3 5/8
2 13/16
2 1/4
1 7/16
11/16
2 1/8
3
1 5/16
9/16
3/8
1
1 3/8
R1