



AMART

Flexible Instruction Day 5

Assignment #5

Learning Standard	Framework (pa.gov) Pick learning standards from the crosswalk
Task # & Description	1307 Identify and interpret geometric dimensioning and tolerancing.

CONTACT INFORMATION/ASSISTANCE

Instructor Name: David Hockenberry

Instructor E-Mail: hockenberryd@butlertec.us

I will be available by email from 7:40-12, and 12:30-3:10 to answer your questions. Please reach out if you are having difficulty completing your assignments.

INSTRUCTIONS

Complete all activities independently using your classroom knowledge. No internet is required.

Name: _____

Session: _____

____/____ points

Common Blueprint Symbols Reference Chart

Symbol Name Meaning

Ø	Diameter
R	Radius
□	Square
⌊	Counterbore
✓	Countersink
↓	Depth
±	Plus or Minus Tolerance
°	Degrees
THRU	Hole goes completely through the part
REF	Reference Dimension
X	Number of times or quantity
C'BORE	Counterbore
C'SINK	Countersink
TYP	Typical
EQ SP	Equally Spaced
CL	Centerline

Part 1 – Symbol Identification

Match the blueprint symbol term with the correct meaning.

Symbol Term	Letter
Diameter	_____
Radius	_____
Counterbore	_____
Countersink	_____

Symbol	Term	Letter
--------	------	--------

Plus or Minus Tolerance		_____
-------------------------	--	-------

Degrees		_____
---------	--	-------

Depth		_____
-------	--	-------

Through Hole		_____
--------------	--	-------

Centerline		_____
------------	--	-------

Typical		_____
---------	--	-------

Meanings

- A. Feature goes completely through the material
- B. Rounded corner or arc measurement
- C. Measurement from the center across a circle
- D. Shows acceptable dimensional variation
- E. Used for angled measurements
- F. Repeated feature dimension
- G. Indicates center of holes or circles
- H. Recessed flat-bottom hole feature
- I. Conical recessed hole feature
- J. Distance below the surface

Part 2 – Multiple Choice

Circle the best answer.

1. Which symbol represents diameter?

- A. R
- B. Ø
- C. ±
- D. □

2. Which symbol is commonly used for radius?

- A. R
- B. Ø
- C. X
- D. CL

3. A countersink is:

- A. A square feature
 - B. A flat-bottom hole
 - C. A conical hole feature
 - D. A centerline
-

4. The symbol $\pm$ represents:

- A. Radius
 - B. Tolerance
 - C. Diameter
 - D. Counterbore
-

5. Which symbol indicates an angle?

- A. $\emptyset$
 - B. $\pm$
 - C. $^{\circ}$
 - D. THRU
-

6. What does THRU mean on a print?

- A. Hole depth is optional
 - B. Hole stops halfway
 - C. Hole goes through the entire part
 - D. Hole is threaded
-

7. Which symbol is used for a square feature?

- A. $\square$
 - B. $\emptyset$
 - C. R
 - D. CL
-

8. "2X $\emptyset$.250" means:

- A. Two holes with .250 diameter
- B. Two radius dimensions

C. Two square features

D. Two countersinks

9. Which note means “equally spaced”?

A. TYP

B. REF

C. EQ SP

D. THRU

10. CL stands for:

A. Centerline

B. Counterbore Line

C. Cutting Length

D. Circular Location

Part 3 – Print Reading Practice

Use the symbols reference chart to answer the questions.

1.

Ø.500 means:

2.

R.125 means:

3.

↓ .750 means:

4.

± .005 means:

5.

4X Ø.250 THRU means:

Part 4 – True or False

Write TRUE or FALSE.

_____ Blueprint symbols help communicate manufacturing information.

_____ Ø is used for diameter dimensions.

_____ R is used for radius dimensions.

_____ THRU means the hole does not go completely through the part.

_____ ± shows allowable variation in a dimension.

_____ TYP means the same dimension applies to similar features.

_____ CL stands for centerline.

_____ Blueprint symbols are important in machining and manufacturing.

Part 5 – Match the Print Note

Match the blueprint note with the correct meaning.

Print Note Letter

Ø.375 _____

R.125 _____

2X _____

±.010 _____

THRU _____

90° _____

Meanings

- A. Angle measurement**
 - B. Radius dimension**
 - C. Hole goes through entire part**
 - D. Diameter dimension**
 - E. Quantity of two**
 - F. Plus or minus tolerance**
-

Part 6 – Safety Review

Circle the safest choice.

1. Why are accurate blueprint symbols important?

- A. They improve paint color**
 - B. They help manufacture parts correctly**
 - C. They replace machine guards**
 - D. They eliminate measuring tools**
-

2. Misreading a print could:

- A. Improve production automatically**
 - B. Cause incorrect parts to be made**
 - C. Stop coolant flow**
 - D. Prevent machine movement**
-

3. Before machining a part, operators should:

- A. Ignore dimensions**
- B. Verify blueprint information carefully**
- C. Remove safety glasses**
- D. Increase spindle override immediately**