

3: Shop Fab Training Video Worksheets

Video # 1: Machine Shop 1 – Basic (40:32)

<http://techtv.mit.edu/genres/24-how-to/videos/142-machine-shop-1>

- Basic Tour:
 - o Lathes are for machining _____ parts with _____ features.
 - o Tool used to smooth down sharp edges from a band saw? _____
- Layout Techniques:
 - o To scribe lines parallel or perpendicular to lines already on a part use what two tools? _____ & _____
 - o How thick is a scribed line? _____
 - o Is the ruler on the square particularly accurate? _____
 - o What is a more accurate way? _____
 - o What tool is used to mark the location for a hole? _____
 - o What is another way to scribe lines? _____
 - o What is a quick way to transfer relative hole locations? _____
- Basic Tools: Drill Press
 - o What is the benefit of using a drill press over a hand drill? _____

- Locating and Drilling Holes
 - o What tool is used to align the spindle of the drill press with your hole? _____

 - o Does the drill press need to be running for this operation? _____
 - o What tool is used to start drilling the hole? _____
 - o What is special about this tool? _____

 - o How far down should you drill with this tool? _____
 - o What tool is used for to clean the hole, and edge of the part? _____

- Tapping Holes
 - o What tool is used to thread holes? _____
 - o What are two ways to tap a hole? _____
 - o With the second method, is the machine running? _____

Honor Pledge: *I watched this video fully focused and without distraction. No answers were dishonestly obtained.* Signed: _____ Date: _____

Video # 2: Machine Shop 2 – Machining Skills for Prototype Development (57:33)

<http://techtv.mit.edu/genres/24-how-to/videos/130-machine-shop-2>

- Drilling Holes
 - o For drilling a hole with a large aspect ratio, what should be used? _____

 - o Define in your own words what “aspect ratio means”: _____

 - o What does cutting fluid do? _____

 - o What is the purpose of “stepping up” when drilling large holes? How big should the steps be (nominally)? _____

 - o What does chattering indicate? How should it be fixed? _____

 - o *Note: drill press transmission in video is different than our lab, and automatic feed rates not available.*
 - o What 3 types of drill bits are there? _____

 - o *Note: Sensitive drilling capabilities not present in lab.*
 - o What is different for drilling holes in brass or plastics? _____

- Drill Press Limitations

- The drill press is not meant to be used as what, even though the functionality can appear similar? _____
- Band Saw:
 - What feature/characteristic of the saw allows the user to cut curves? _____
 - What is the danger of cutting thin materials? _____
 - *Note: Hydraulic shear available for TA assist in cutting thin materials*
- Suitable Speeds, Feeds, Materials
 - How does one prevent blade wandering? _____
 - Which cuts faster, aluminum or steel? _____
 - Describe proper use of the blade guard/guide? _____
 - Describe your body position relative to the bandsaw? _____
 - *Note: Video instructor is seen sitting on stools. NEVER sit down while operating the machinery in the lab. Sitting encourages complacency, and bad places your face closer to the cutting area – an obvious danger.*
 - What tool do you use to grip round stock when cutting? _____

Honor Pledge: I watched this video fully focused and without distraction. No answers were dishonestly obtained. Signed: _____ Date: _____

Video # 3: Machine Shop 3 – Machining Skills for Prototype Development (30:02)

<http://techtv.mit.edu/genres/24-how-to/videos/181-machine-shop-3>

- Belt Sander
 - How should hot spots on belt be eliminated? _____

- Describe precautions in holding parts? _____

- *Note: Small belt sander not available in lab.*
- Grinder
 - What is the primary purpose of the grinder? _____

 - *Note: Consult TA prior.*
 - What happens when you grind aluminum? _____

- Deburring and Buffing & Finishing
 - The deburring wheel is similar to what kitchen tool? _____
 - Can this be used on hard materials? _____
 - What does the buffing wheel need to operate? _____

Honor Pledge: *I watched this video fully focused and without distraction. No answers were dishonestly obtained. Signed: _____ Date: _____*