

NAME: _____ Date: _____

Instructions: Please answer the following questions BEFORE coming to the shop to participate in mill training. The space provided is an indication of how much we want you to write for an answer. Please be as brief as possible. Submit the completed worksheet to your trainer.

You should complete all of the readings before starting this worksheet. Attempt to answer all of the questions in a closed book environment, and then using a different pen color check your answers and answer unanswered questions using the readings. You will need correct answers to all of the questions before you can schedule a training session with an instructor.

1. The table of a vertical milling machine rests on the:

- a) Column b) Spindle c) Saddle d) Head

2 How many axes does a standard knee-type milling machine have? What are they and sketch their orientation and positive direction on the machine?

3. The most commonly used workholding device on the vertical milling machine is a:

- a) Hold down clamp b) Vise c) Rotary table d) Dividing head

4. To ensure even seating and to combat any tipping action caused by the moveable jaw, the best practice is to:

- a) Use gage pins underneath the parallels
b) Mount the workpiece in the vise using a bubble level.
c) Use paper shims underneath the parallels and underneath the workpiece
d) Mount the workpiece on clean parallels and tighten the vise very tightly with a leverage bar

5. List the appropriate operations and materials for each of the following tools:

- a) Two-flute square endmill:

b) Four-flute square endmill:

6. Which of the following describes the safest procedure for measuring a part on the milling machine?

- a) Raise the table and check the dimension
b) Stop the machine, deburr, brush chips clear, check the dimension

- c) Stop the machine, blast chips out of the vice with compressed air, deburr, check the dimension
d) Take the part out of the machine, deburr, brush chips clear, stop the machine
7. An edge finder has a tip diameter of 0.200 inches. What distance must the table move to align the center of the edge finder to the edge of the workpiece?
a) 0.200 inches b) 0.100 inches c) 0.400 inches d) 0.050 inches
8. Which of the following are advantages of drilling on a milling machine instead of drill press?
a) The milling machine is capable of greater accuracy
b) The milling machine is more rigid
c) The milling machine is less expensive than purchasing a drill press
d) All of the above
e) Only a and b
9. Which of the following best describes the procedure for drilling a hole with a drill press? Also, circle the operations in your answer that would be unnecessary for drilling with a milling machine.
a) Layout, center drill, center punch, drill
b) Drill, center drill, layout, center punch
c) Layout, center punch, center drill, drill
d) Center drill, drill, layout, center punch
10. The cutting speed (in rotations per minute) is determined by:
a) The type of material being machined
b) The size of the vertical milling machine
c) The rigidity of the workholding device
d) Number of cutting edges on the tool
11. Feed rates for milling operations are expressed as _____.
a) Inches per revolution
b) Feet per minute
c) Meters per millimeter
d) Inches per minute
12. Which of the following statements is **NOT** considered a safe practice when operating a vertical milling machine?
a) Using a brush to clear away chips
b) Stopping the machine before taking any measurements
c) Reaching over a revolving cutter
d) Using the speeds and feeds appropriate for the machine