1. In the normal sequence of construction, main stairways are built or installed after interior wall surfaces are complete and finished flooring or ____ has been laid.

2. The main stairway in a residential dwelling should be ____ wide for easy movement of people and furniture.

3. There are several ways to describe or classify a stair. One way is to indicate whether or not it is enclosed by walls. With this in mind, identify the stair drawings below.

A

B

C

D
4. The size of the rough opening for a stairwell must be known or calculated during the rough framing of a structure. Members around the opening (trimmers and headers) should be doubled whenever they are longer than ____.  
   A. 4’  
   B. 6’  
   C. 8’  
   D. 10’

5. Identify the basic parts and stair terms in the drawing below.

6. Stair angle or slope is determined by the rise-run combination. The preferred angle for a standard stair is in the range of ____.  
   A. 20°–25°  
   B. 25°–30°  
   C. 30°–35°  
   D. 35°–40°

7. The relationship or size ratio between risers and treads is very important in stair design. One commonly accepted rule states that the sum of two risers plus one tread should equal ____ inches.  
   A. 18–20  
   B. 20–22  
   C. 24–25  
   D. 25–26

8. If a given stair has a riser 6 3/4” high, the correct width of the tread (less nosing) should be ____. Apply the rule referred to in question 7. Show your calculations in the space below.  
   A. 10 1/2”–11”  
   B. 11 1/2”–12 1/2”  
   C. 13 1/2”–14”
9. A minimum total width of 3’ is generally recommended for a main stairway. The Federal Housing Administration (FHA) regulations permit a minimum width (clear of the handrail) of
   A. 2'-6"
   B. 2'-8"
   C. 2'-10"
   D. 2'-11"

10. Except for very wide stairs, a handrail on one side or the other is satisfactory. The drawing below shows the position of a handrail attached to a wall. Provide the recommended heights for the labeled parts.

11. Calculate the number and size of risers and treads for a main stairway (straight run) for a residence. The vertical distance between the finished surfaces of the two floors is 8'-11" and the riser height must not be greater than 7 1/2". Use the riser-tread rule given in question 7. Show your calculations in the space below.

   No. of risers: 
   Riser height: 
   No. of treads: 
   Tread width: 

12. Using the figures developed in question 11, determine the total run of the stairs. Show your calculations in the space below.

13. Before making the actual layout of a stair stringer, the calculated riser height is laid out and checked with a straight strip called a(n) ______.

14. When all of the risers and treads have been laid out on the stringer stock, an adjustment must be made for the thickness of the tread. This is best accomplished by ______.
   A. relocating each tread line downward by an amount equal to tread thickness
   B. extending the top riser and shortening the bottom riser by an amount equal to tread thickness
   C. shortening the bottom riser by an amount equal to the tread thickness

15. Nosing is an important part of a stair tread. In typical construction, it ranges in width from 1” to ______. As a general rule, when the basic width of a tread is increased, the nosing width is ______ (increased, decreased).

16. Identify the three basic types of riser design shown.

A. ______
B. ______
C. ______

17. The simplest type of stringer is formed by attaching cleats on which the treads can rest. Another method consists of cutting dados into which the treads will fit. The depth of the dados should equal ______ of the stringer thickness.
   A. one-fourth
   B. one-third
   C. one-half
   D. five-eighths
18. When a cutout stringer is attached with nails or screws to a backing stringer, the assembly is generally referred to as a(n) ____ stringer.

19. In the highest quality of stair construction, tapered grooves are cut into the stringer. Treads and risers are inserted into these grooves and held in place with glue and wedges. The standard taper used for the wedges is ____ per foot.
   A. 1/4”
   B. 3/8”
   C. 1/2”
   D. 3/4”

20. Winder stairs have a tapered tread in the section where the direction of the run is changed. It is recommended that the center of convergence of this taper be located ____ the stair construction.

21. Main stairs that are open on one or both sides usually have a decorative structure that supports the handrail. This assembly is generally called a balustrade. In the view below, identify the parts specified.

22. High-quality handrail sections are joined together with a special concealed bolt and nut. The nut is properly tightened by using a(n) ____ and ____.
23. Which part of a balustrade must be securely attached to the starter step or anchored to the building frame?
   A. Open stringer.
   B. Baluster.
   C. Newel.
   D. Bracket.

24. Stair parts are ordered through a lumber dealer or a(n) ______ dealer.

25. The main purpose of _____ is to prevent anyone from slipping under the railings and falling to the floor below.