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Issues of Developing the Culture of Measurement in Drawing Lessons (In the Case of General Secondary Schools)

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Annotation: This in the article drawing of classes efficiency and of students this to science interests increase methods cause passed. Also lesson in the process to apply possible has been method and playful technologies are also examples through showing given. To the drawings size to put through student of students creative to develop their abilities as well possible the fact that showing passed.

Keywords: drawing, creative ability, playful technology, methodology, didactics, didactic games, instructions weapons, instruction.

Not only the shape of the item and its elements depicted in the drawing, but also their dimensions should be given.

The item is made based on its dimensions. The number of dimensions placed in the drawing should be as few as possible, and at the same time, it should be sufficient to make and control the product. The numerical values of the dimensions should represent the actual dimensions of the item in the image, regardless of the scale of the drawing.

are set according to the rules specified in **GOST 2.307-96** .

Dimensions are divided into **linear** and **angular** dimensions. In the drawing , **linear dimensions** are placed on the Dimension lines in millimetres, without specifying the unit of measurement. Size numbers are written from left to right, from bottom to top, relative to the drawing's base text.

If in the drawing, the dimensions should be put not in **mm** , but in another unit of measurement (for example, **cm** , **m** , etc.), then the unit of measurement is written next to the number of the size or it is specified in the technical requirements of the drawing. is displayed.

Angle sizes are displayed in degrees, minutes and seconds, for example **30°, 8°10', 21° 12' 30".**

Dimension lines are placed in decimal places. It is allowed to put only inch sizes in simple fractions.

In the drawing, each dimension is placed only once. Duplication of dimensions is allowed only in construction drawings.

Dimensions and output lines. In the drawing, the dimension lines are drawn with a thin connecting line, and the ends are demarcated with an arrow. Arrows indicate the measurement limit of the product element. The shape of the arrow and the ratio between them are shown in Figure 1.

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Dimension lines can be placed on main contour lines, axis lines, between centers. The distance between the drawing line and the dimension line and the distance between the dimension lines should be **6...10 mm (Fig. 2).**

When setting a dimension on a straight line section, the dimension line is placed parallel to this section. Dimension lines are placed as much as possible outside the contour of the drawing and they should not cross each other.

hatch lines are subtracted from the visible contour lines. If it is not possible, it is allowed to draw lines from invisible contour lines.

The output lines are placed perpendicular to the dimension lines and drawn with a thin dashed line. The output line is drawn **1...5 mm** from the dimension line (Fig. 2).

When showing the size of a circular arc, the dimension line is concentrically transferred to the circular arc. In this case, the output lines are drawn parallel to the diagonal of the corner b i , and the sign of the circular arc, i.e. ∩ **sign, is placed on the size number** (Fig. 3).

The length of the radius of the arc (for example, **R3O**) is shown as in Figure 3. The size of the angles is set as shown in Figure 4.

If the size is indicated in the hatched zone, the number of the size is indicated in horizontal bars. The number of dimensions of the angles is written parallel to the dimension line and placed in the middle of it as much as possible.

If the appearance or cut of symmetric objects, as well as any of their symmetrical elements, is depicted up to the axis or cut off, then the dimension lines are also cut off a little past the axis. Also, when showing the diameter of the circle, the circle is complete or partial

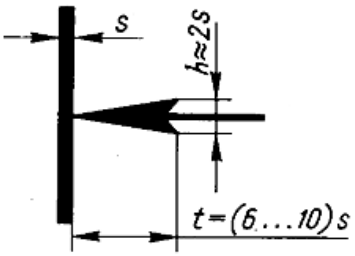

Figure 1

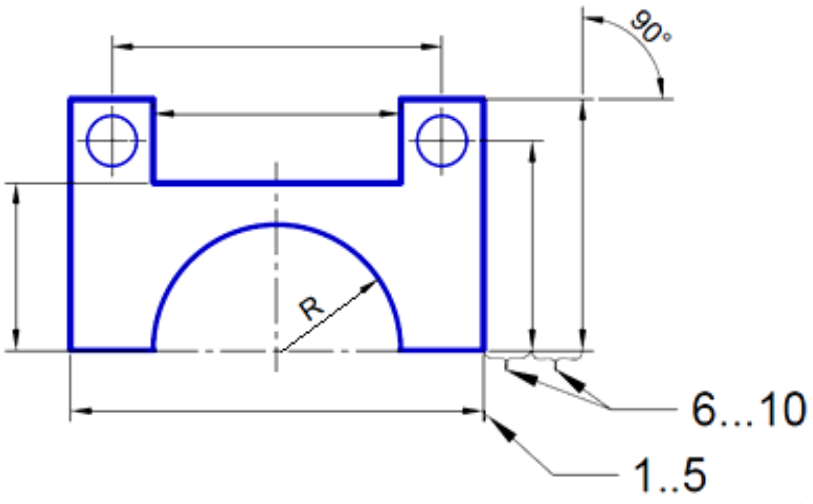

Figure 2

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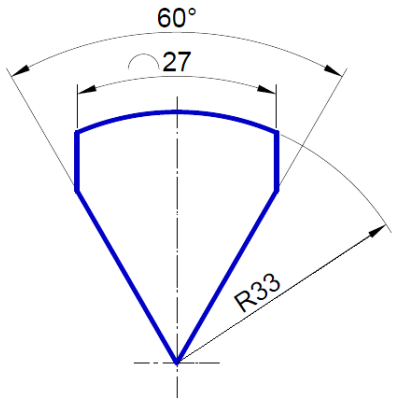

Figure 3

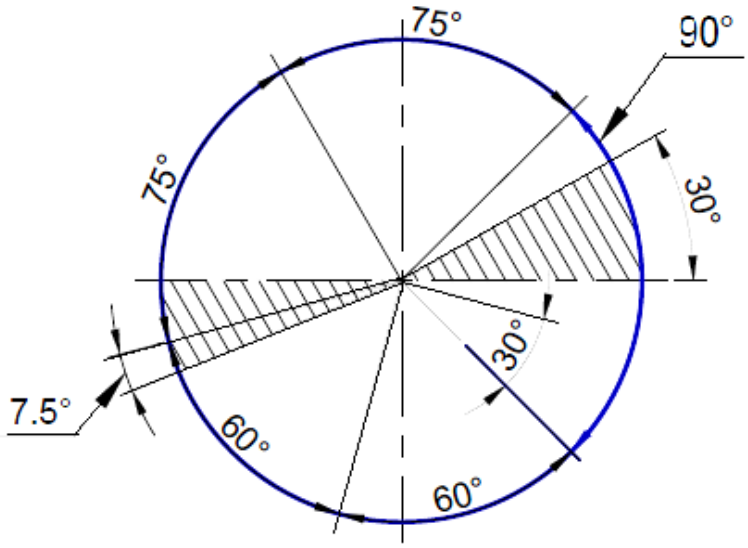

Figure 4

Regardless of what is described, the size line is cut off a little past the center of the circle (Fig. 5).

If there is not enough space on the drawing to place chain-shaped dimensions, the arrows should be marked with **3 mm** bar lines at an angle of **45° to the dimension line (Fig. 6, a)** or with clearly visible dots. can be replaced (Fig. 6 **, b**).

The contour line of the drawing is not interrupted for placing the size numbers, and the size numbers are not placed at the intersection of the size, axis and center lines. In the place where the size is placed, the axis, the center hatch lines are cut off (Fig. 7, **a, b**).

Symbols and inscriptions . Radius size is written with the capital letter **R in front of the number.** If it is required to indicate the dimensions determining the position of the center of the circular arc, then it is possible to draw the dimension line of the radius without reaching the center and moving the center (Fig. 8, **a**). With a large radius, the center is drawn closer to the circular arc, and the radius line is drawn with a broken line with angles equal to **90°** (Fig. 8, **b**).

In the drawing, the radii of any two sizes transferred from the same center should not lie in one straight line (Fig. 8, **c**).

The dimensions of the external and internal rounding radii are set as shown in Figure 9.

the size of the diameter, ∅a sign is placed in front of the number of the size (Fig. 10). The height of the symbol is equal to the height of the number, its diameter is **5/7 of its** height, and the slope of the line is **75°** (Fig. 10, **b**). This symbol is an additional tool for determining the shape of an object or its element consisting of a rotating surface.

When placing the size of the diameter of the circle inside the circle, the number of the size is placed on the edge of the center of the circle (Fig. 10, **a**).

If there is not enough space for setting the size, i.e. in circles with a small diameter, the sizes are set as shown in Figure 10, **c** and **d** .

To show the size of the diameter or radius of the sphere in the drawing, the size number is in front of it∅ symbol or the letter **R (Fig. 11, a**). If it is difficult to distinguish the sphere from other rotating surfaces in the drawing, then the word " **Sphere " is written in front of the dimension (Fig. 11, b**).

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In front of the size number of square or square-shaped holes □ is marked or form 12, the same size is set. The size of the square symbol is equal to **5/7** of the height of the number.

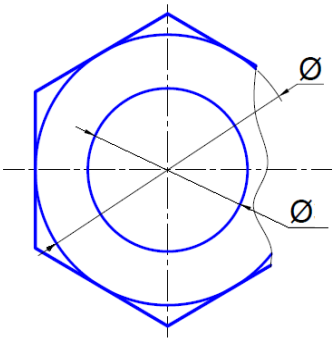
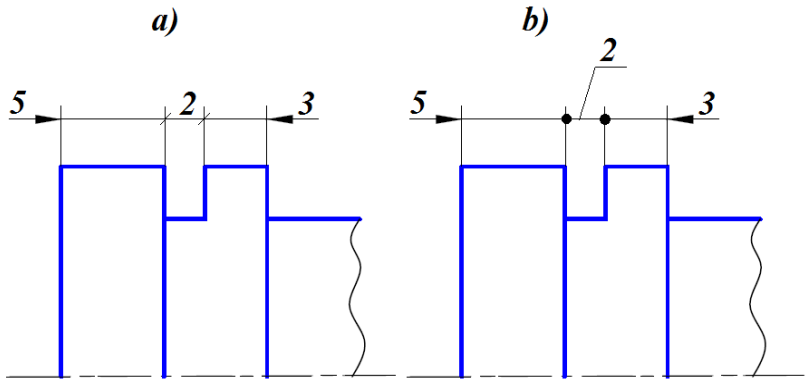
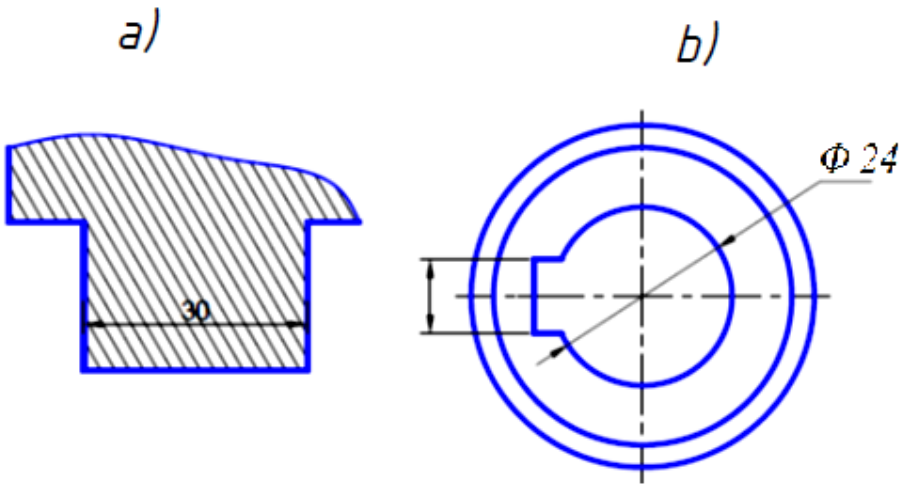


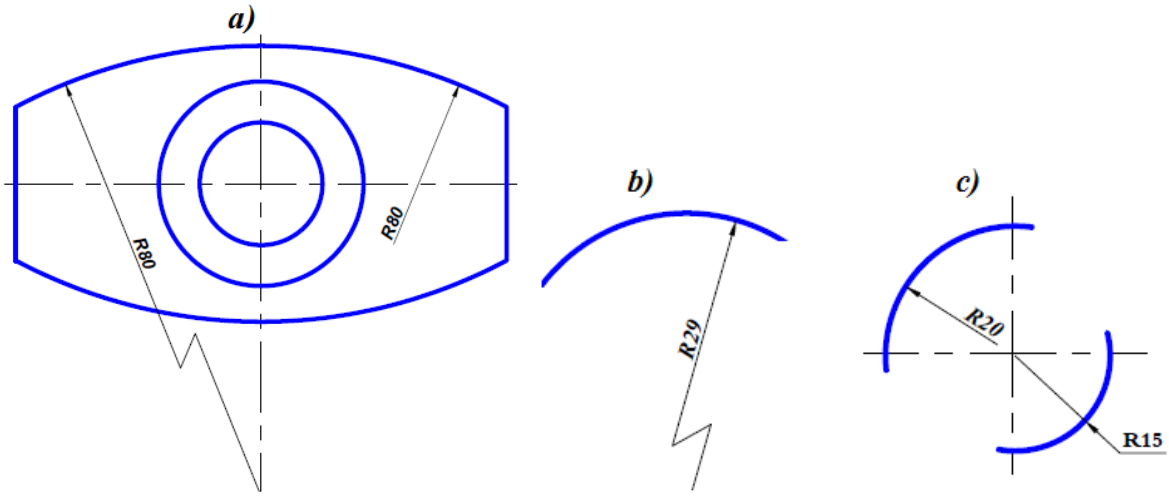
Figure 5



6 - fig



7 - fig



8 - fig

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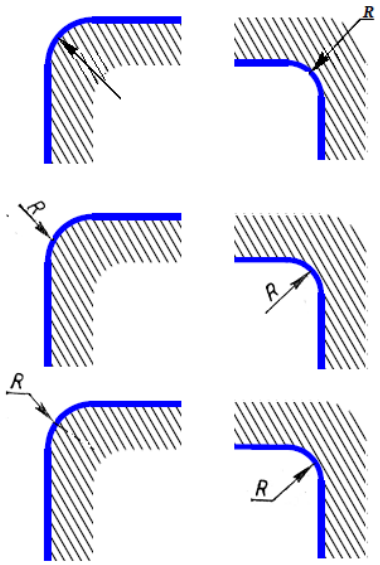

Figure 9

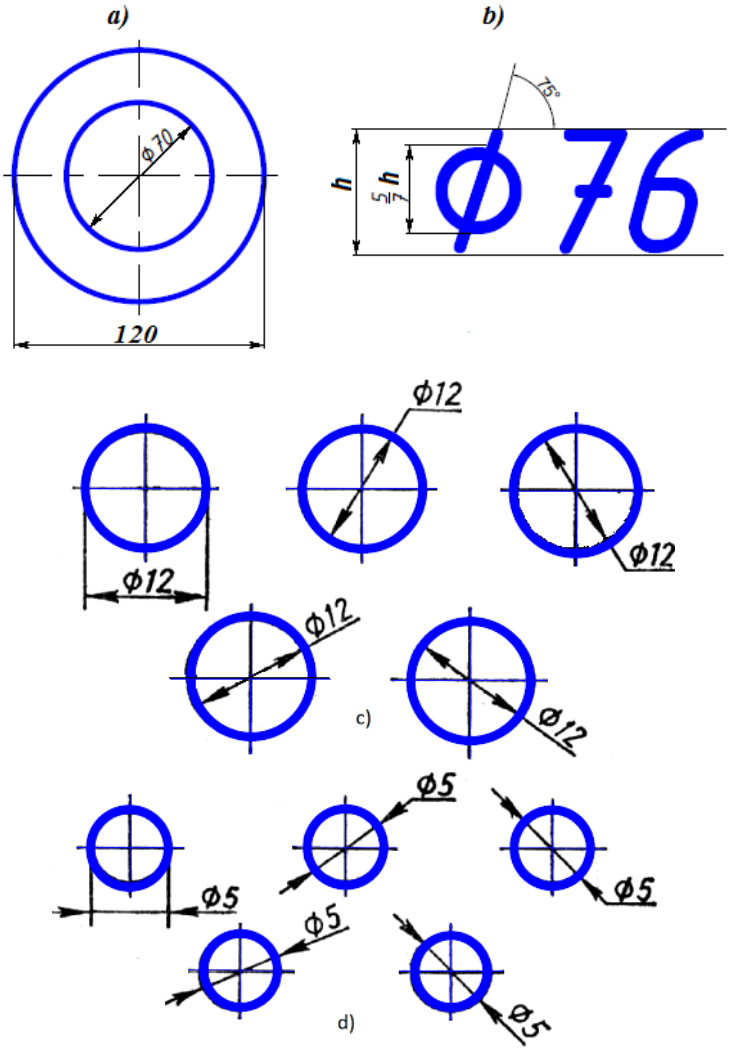

Figure 10

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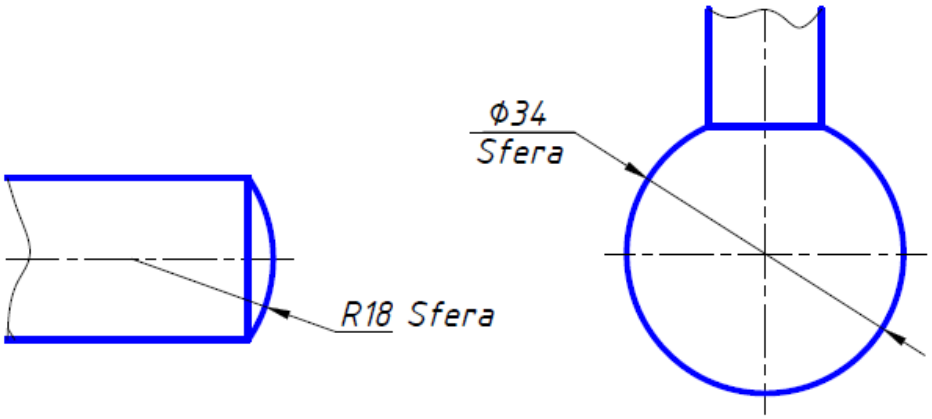

Figure 11

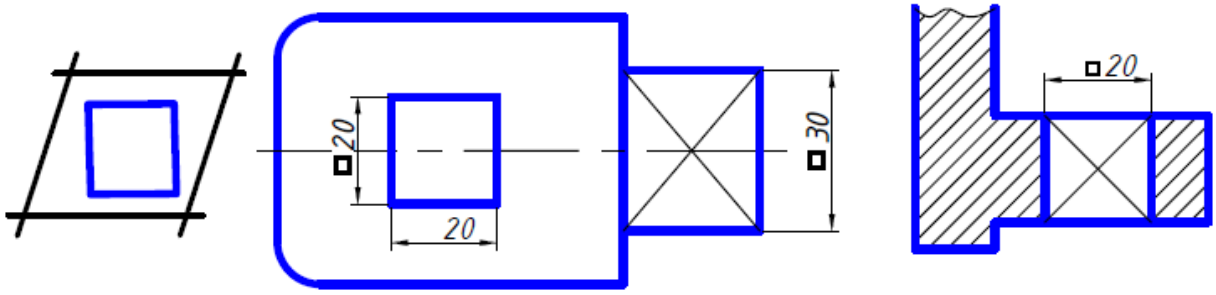

Figure 12

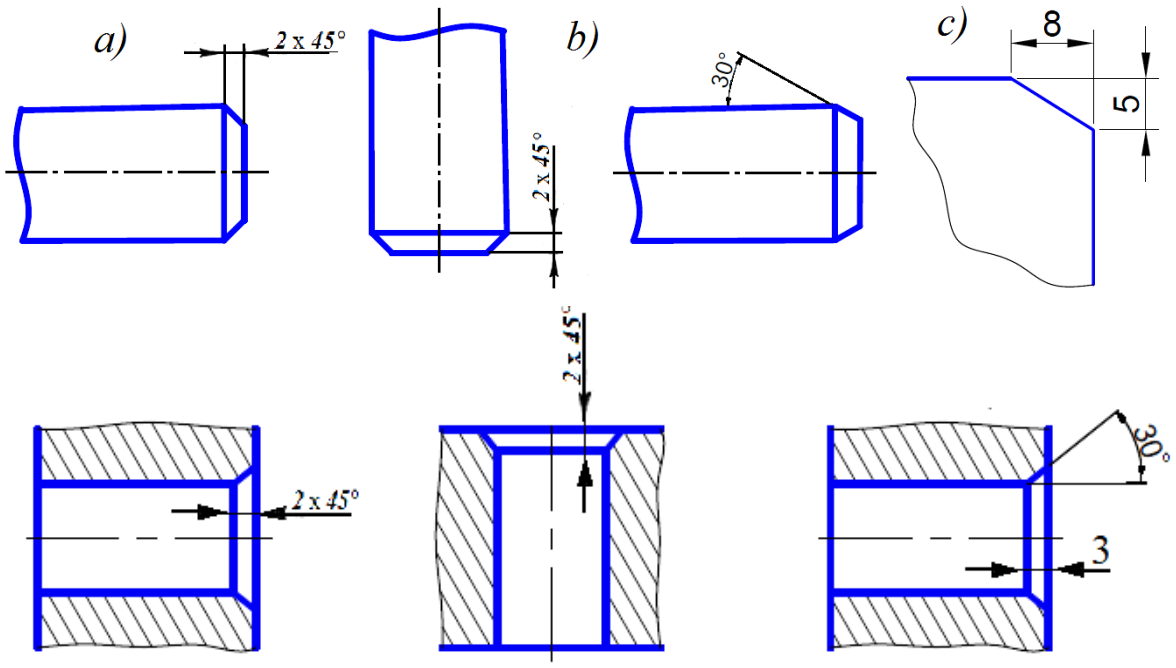

Figure 14

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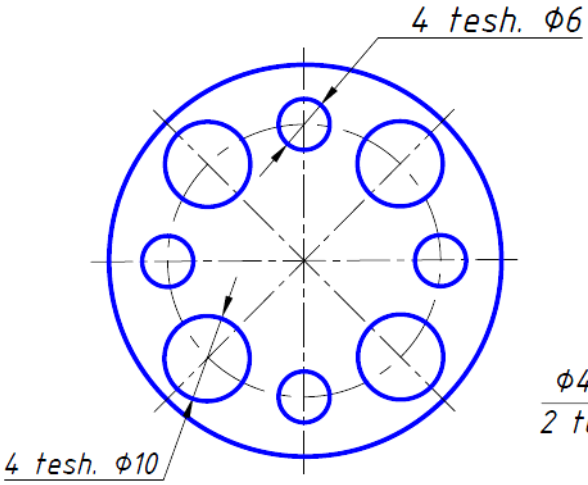

Figure 15

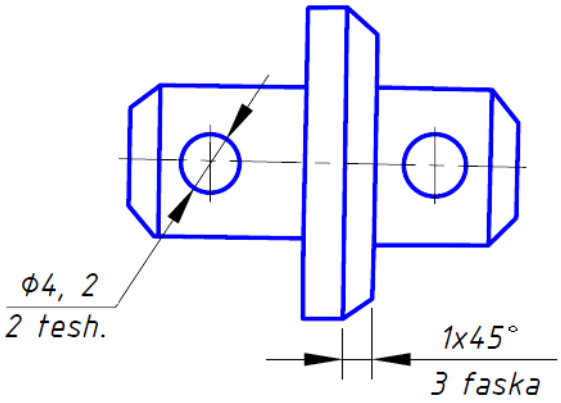

Figure 16

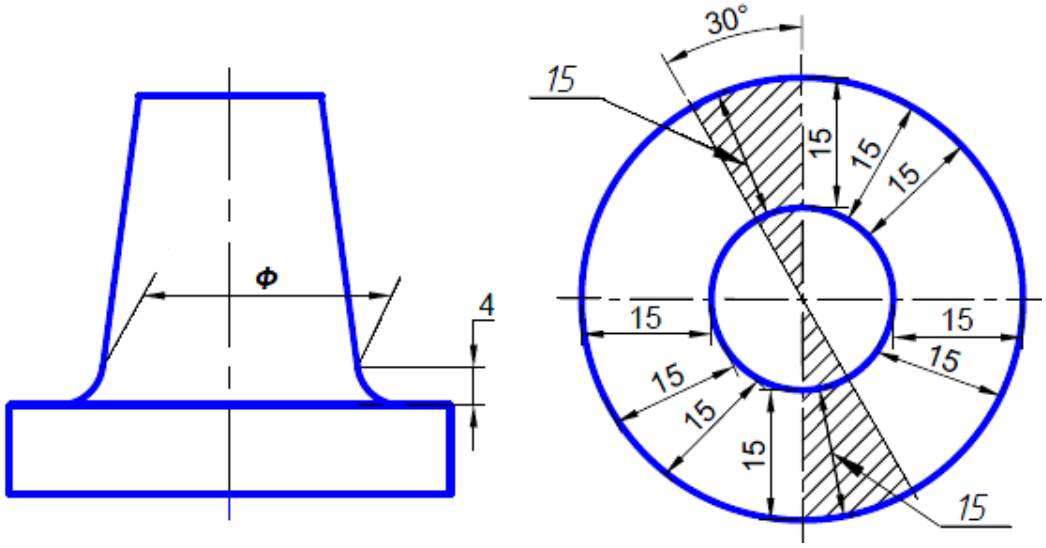

Figure 13

Before the number of dimensions of the slope∠ a sign is placed, in which case its tip is directed towards the slope (Fig. 13, **a**).

pointing towards the tip of the cone is placed in front of the size number representing conicity ◁ (Fig. 13, **b**).

Some details have chamfers cut at different angles. A **45° chamfer is defined as** 2x45 ° . In this case, the first number (**2**) represents the height of the chamfer, and the second **45°** represents the angle of the chamfer (Fig. 14, **a**). Chamfers made at other angles are shown on the basis of general rules, that is, with linear and angular dimensions (Fig. 14, **b**) or linear dimensions (Fig. 14, **c**).

In the drawing, the number of holes, chamfers and similar elements of the same size in the product is determined as shown in Figure 15.

In some cases, the size and output lines can be transferred so that they form a parallelogram with the section being measured (Fig. 16).

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If in the drawing, the size numbers of the linear dimensions are transferred at different slopes, the dimension lines are placed as shown in Figure 13 and as much as possible in the middle of the dimension lines.

When several parallel or concentric measurement lines are placed at a close distance to each other, the measurement numbers placed on them should be placed in a checkerboard pattern (Fig. 17 **a, b**).

If the middle part of the item depicted in the drawing is cut off, the size lines are shown without cutting off (Fig. 18).

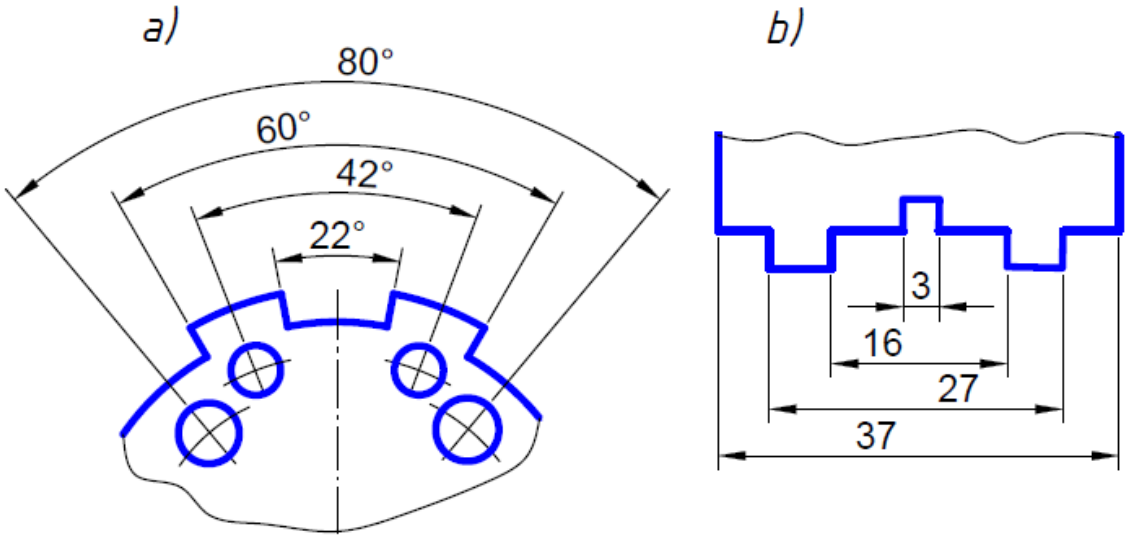

Figure 17

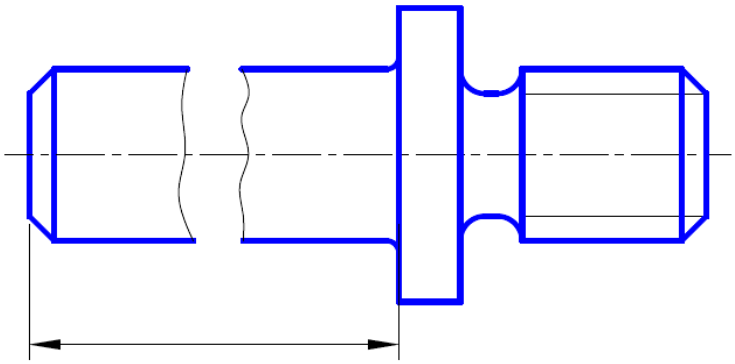

Figure 18

Conclusion

If the teacher's training, that is, his knowledge and pedagogical skills were always at the required level, and the student's interest, concentration and memory were always at a high level, it is possible to achieve a high result even when using any method in the educational process. was But these indicators are rapidly changing, and conducting the pedagogical process taking into account these changes is one of the most necessary conditions. Aks without education _ from the process intended to the goal achieved it won't be. Then in them hole, groove, ditch _ such as elements to make it becomes easier. That's it creative design o' yinini from the start before teacher selected detail

appearances geometric to surfaces apart from the students help and work of the teacher in cooperation their models to make can _ Education _ in the process in detail size to put technologies with of students that's it to science interest of our students potentials to develop to reach can _

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