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Учреждение образования

"Витебский государственный технологический университет"

Практикум по инженерной графике Построение изображений

Часть 2

**ВИТЕБСК
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Практикум по инженерной графике. Построение изображений. Часть 2.

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Практикум по инженерной графике содержит задания и краткие методические указания по построению изображений. Практикум составлен в соответствии с рабочей программой курса "Начертательная геометрия. Инженерная и машинная графика" для студентов дневного и заочного отделений, обучающихся по технологическим специальностям.

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ВВЕДЕНИЕ

Практикум предназначен для проведения практических занятий по инженерной графике со студентами дневной и заочной формы обучения. Задания также могут использоваться студентами при самостоятельной подготовке.

Практикум составлен в соответствии с типовой программой дисциплины "Начертательная геометрия, инженерная и машинная графика" студентов технологических специальностей. Конкретный перечень выполняемых студентом заданий определяется рабочей программой.

Практикум состоит из 4 разделов по 60 вариантов заданий в каждом. Номер задания состоит из номера раздела и порядкового номера задания в разделе. Например: 3Т.07, где 3Т - номер раздела, 07 - порядковый номер задания. В начале каждого раздела даны краткие методические указания, приведены образец исходного задания и пример его выполнения.

При выполнении заданий следует руководствоваться следующими общими указаниями:

Исходные изображения даны в законченном виде.

Приступая к выполнению заданий, необходимо предварительно проработать соответствующие разделы ГОСТ 2.305-68 "Изображения - виды, разрезы, сечения".

Задания следует выполнять на листах формата А3 (297х420) в масштабе 1:1. Каждый чертеж должен содержать рамку и основную надпись, заполняемую в соответствии с ГОСТ 2.104 -68 "Основные надписи". В графе "Наименование" указывается наименование работы "Построение изображений".

Необходимо рационально разместить изображения на поле чертежа, то есть так, чтобы поле чертежа было заполнено равномерно. Размещение изображений на поле чертежа называется компоновкой. К компоновке чертежа приступают после того, когда установлено, сколько и какие изображения следует вычерчивать, каковы их габаритные размеры. При выполнении трех изображений рекомендуется расстояния между изображениями и от рамки чертежа выдерживать примерно одинаковыми (**рис. 1**).

Для развития творческого подхода к решению заданий (разделы 3Т, 4Т) в их условиях положения секущих плоскостей не показаны. Следует выполнять такие разрезы, которые позволяют наилучшим образом выявить внутреннюю форму предметов. В большинстве заданий секущие плоскости разрезов должны быть направлены по плоскостям симметрии предметов или их элементов. Разрезы рекомендуется располагать на месте соответствующих видов.

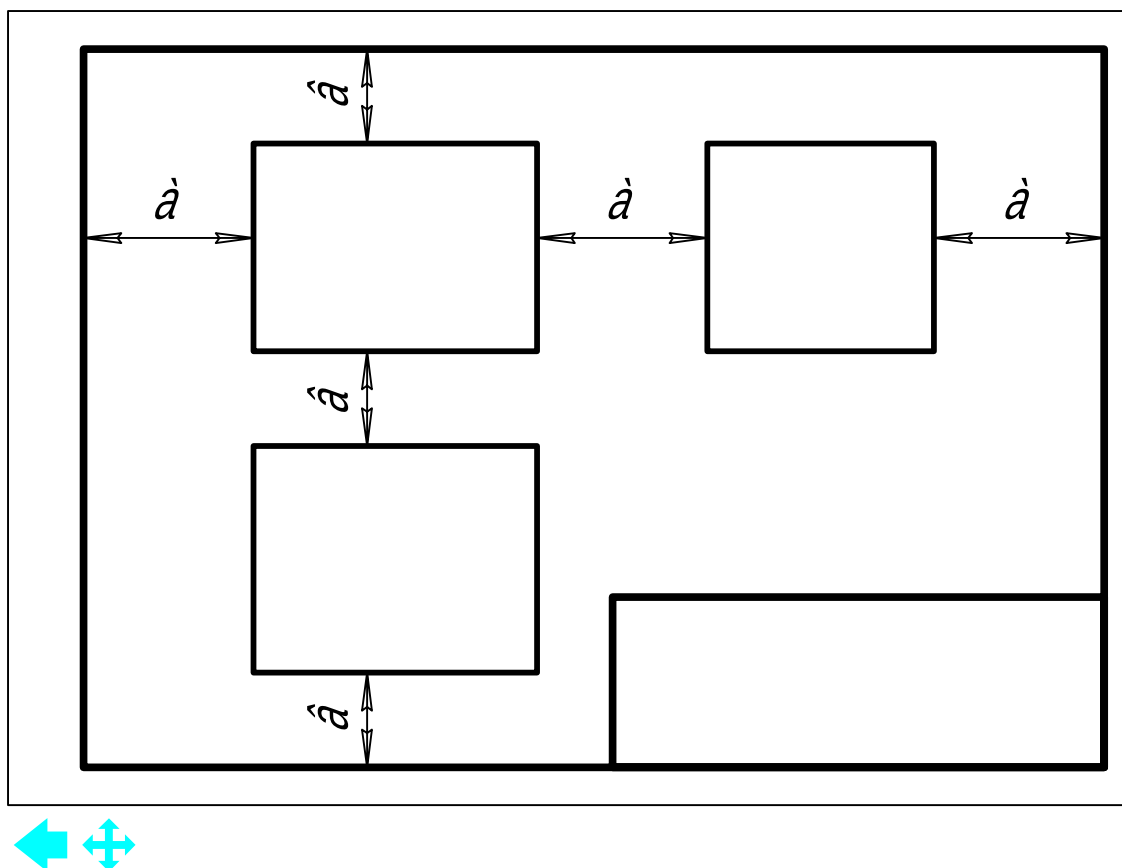


Рис. 1. Пример компоновки чертежа

Выполнение разрезов не должно нарушать общей ясности чертежа. В связи с этим рекомендуется там, где это возможно, выполнять разрезы в соединении с видами. Изображения с разрезами не должны содержать штриховые линии.

Количество видов и разрезов в соответствии со стандартом должно быть минимальным и достаточным для чтения чертежа. В учебных целях допускается выполнять большее количество изображений, чем рекомендуется стандартом.

Рекомендуется наносить размеры после выполнения заданий, учитывая, что часть из них следует наносить на разрезах. При нанесении размеров необходимо руководствоваться ГОСТ 2.307-68 "Нанесение размеров и предельных отклонений".



1Т. ПРОЕКЦИРОВАНИЕ МНОГОГРАННИКОВ (задания 1Т.01..1Т.60)

В условии каждого задания даны две проекции многогранника - фронтальная и горизонтальная (**рис. 2**). Указаны размеры.

Требуется построить три проекции многогранника – фронтальную, горизонтальную и профильную, изобразив его внутренний контур штриховыми линиями. Построение выполнить с использованием линий связи, которые необходимо сохранить при окончательном оформлении задания.

Пример выполнения задания показан на **рис. 3**.

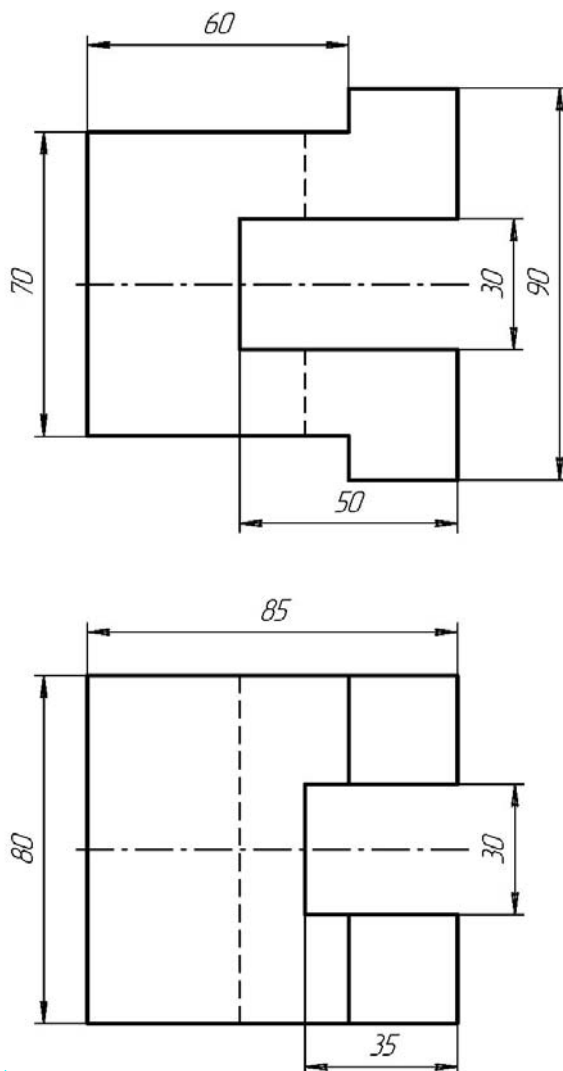
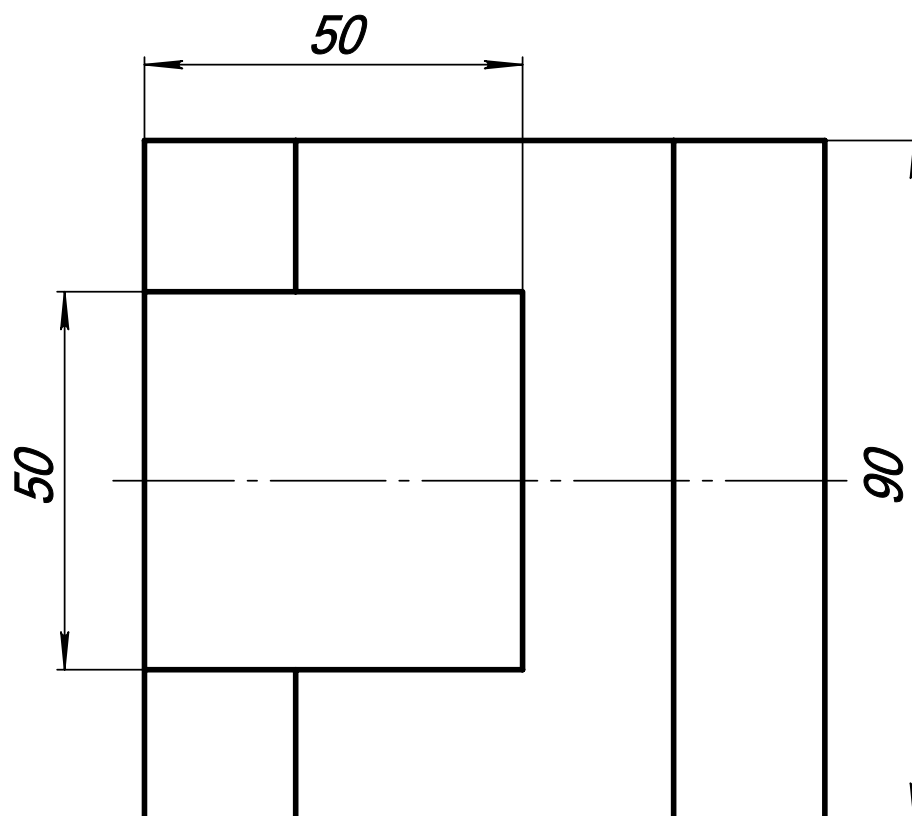
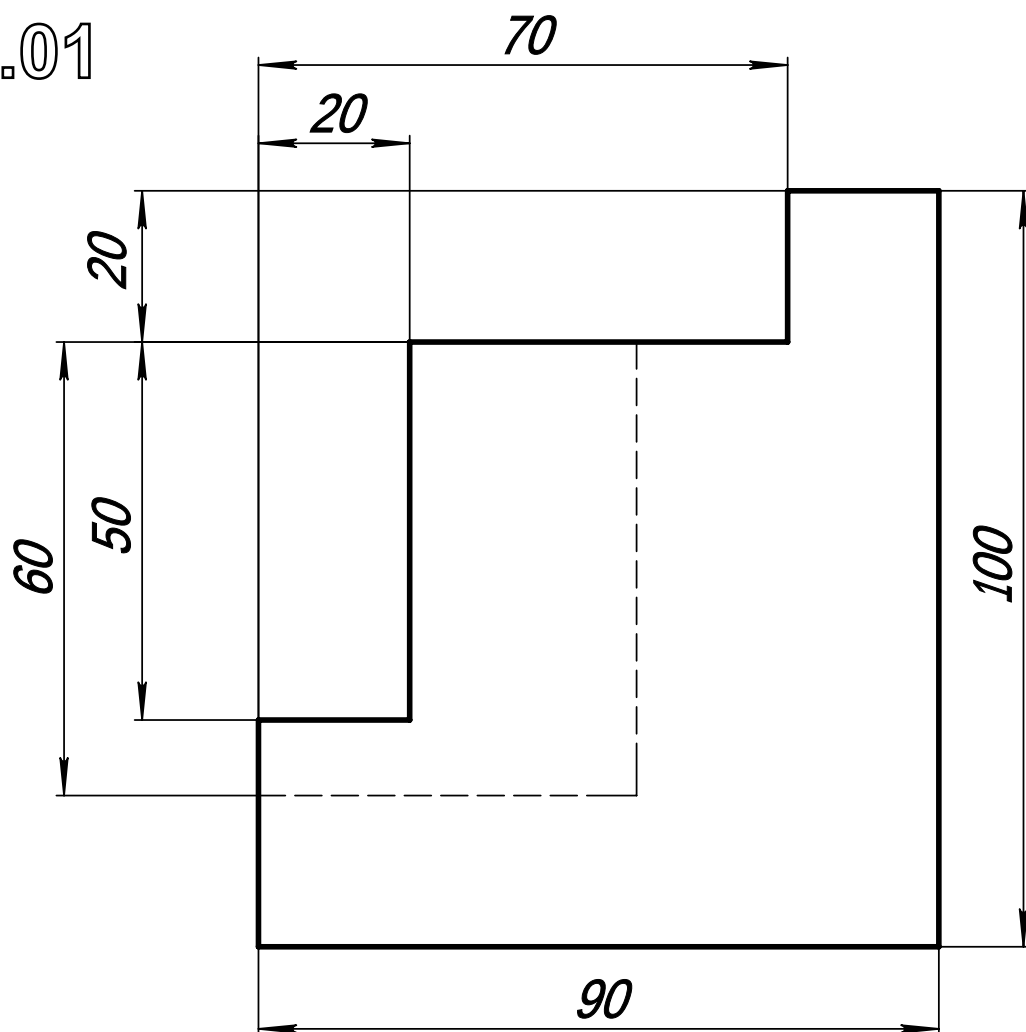
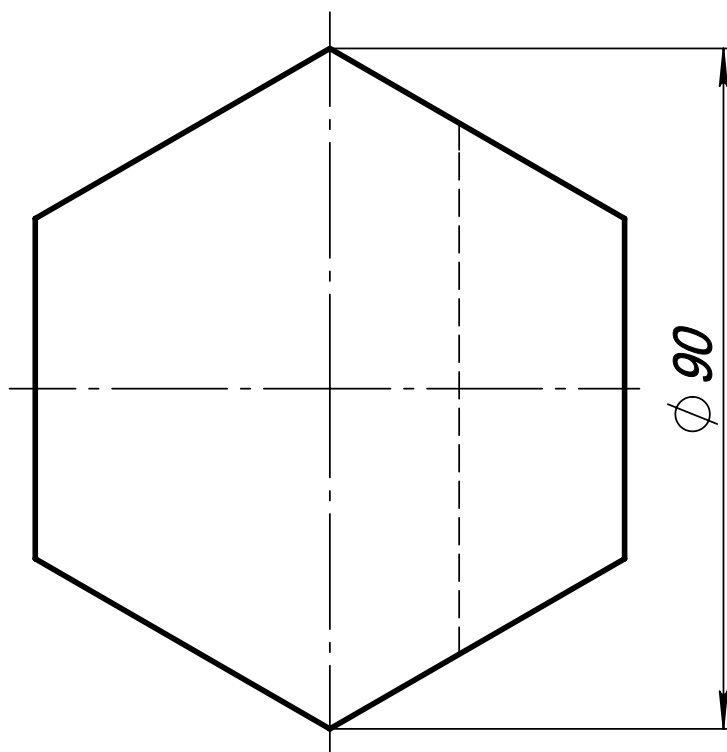
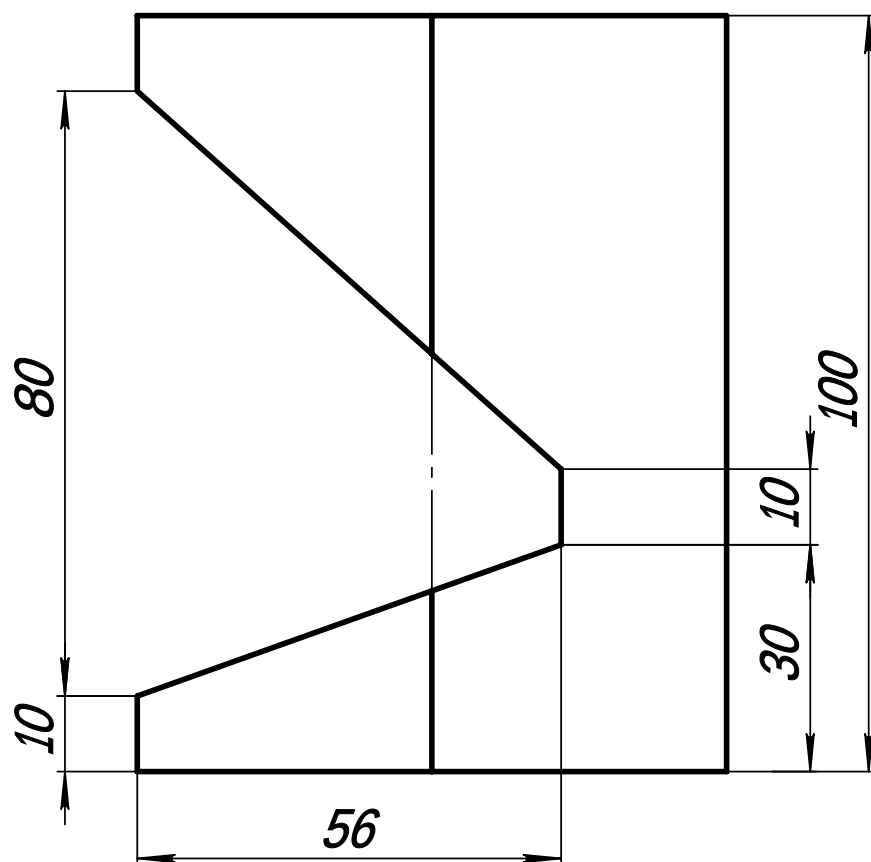


Рис. 2. Пример задания из раздела 1Т



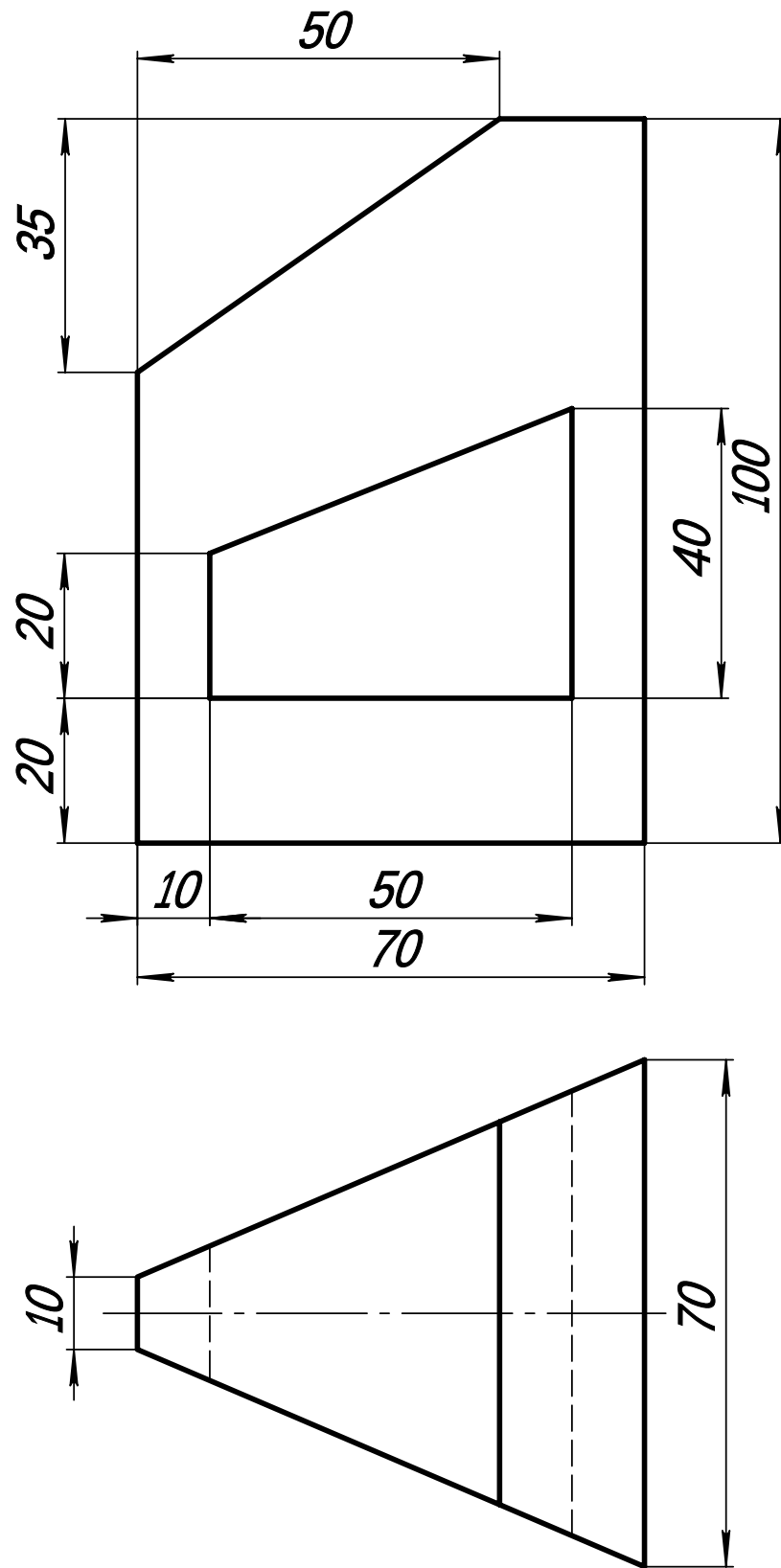
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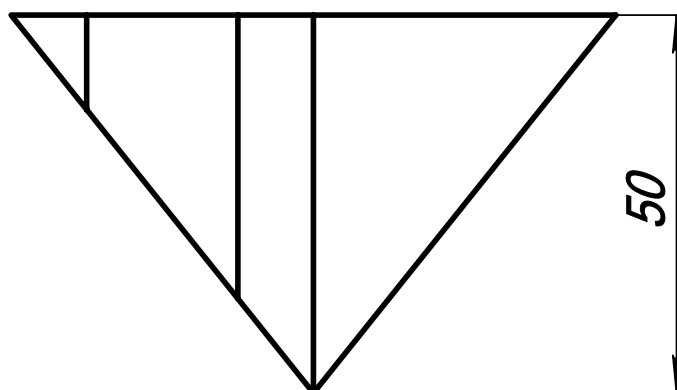
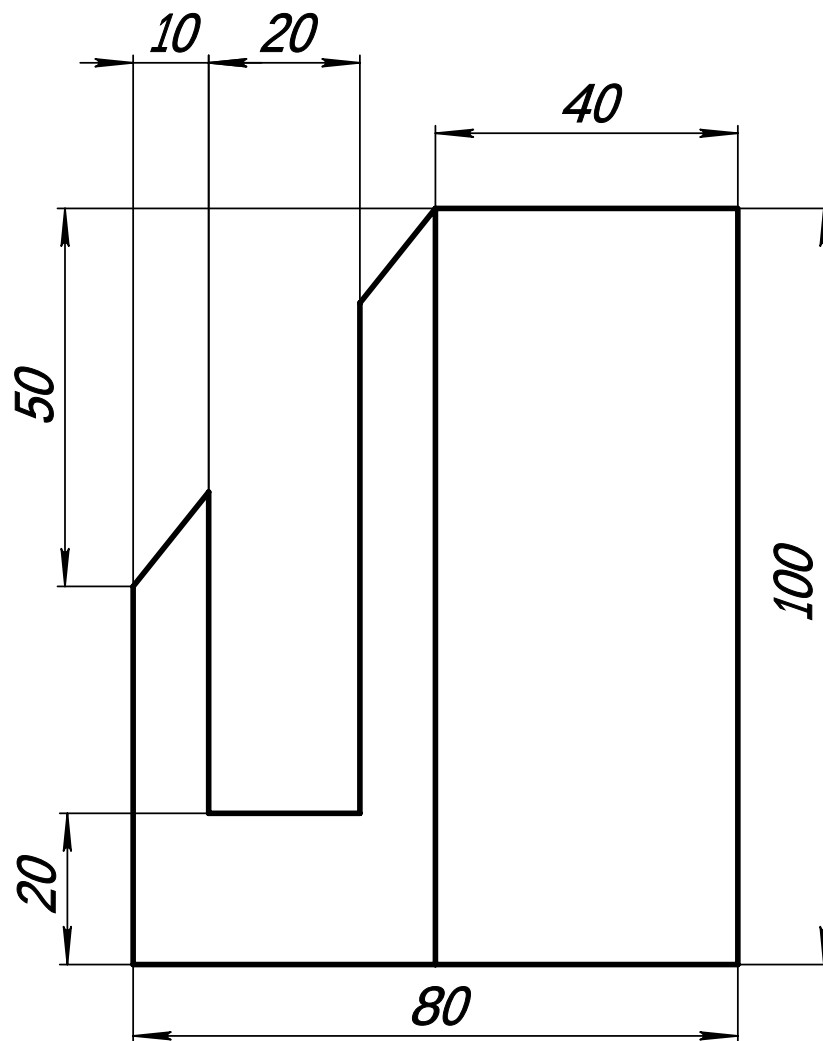


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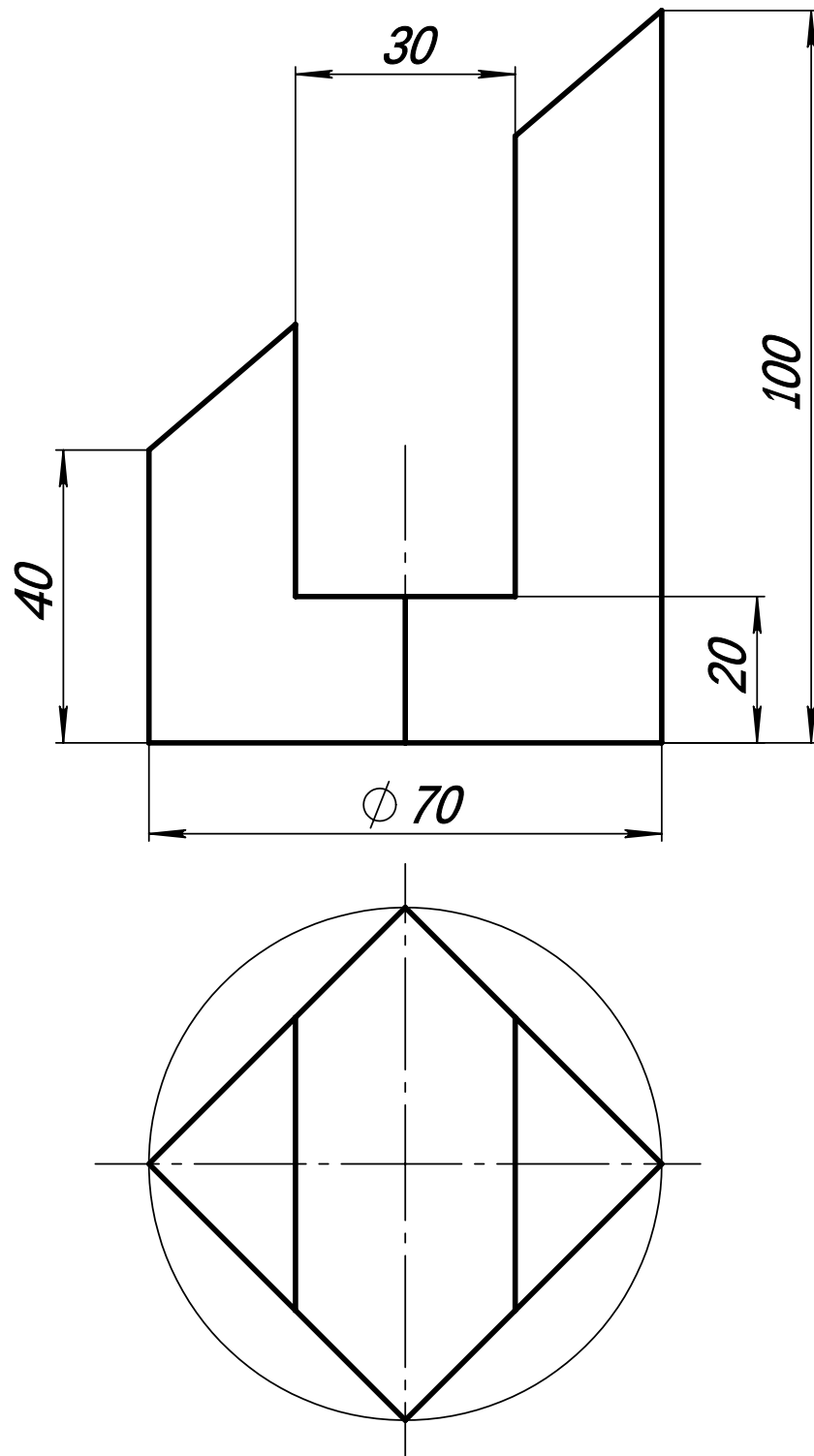


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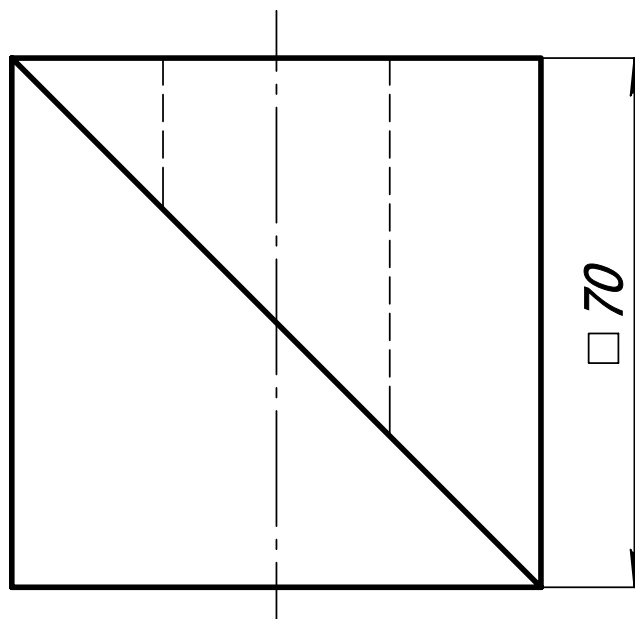
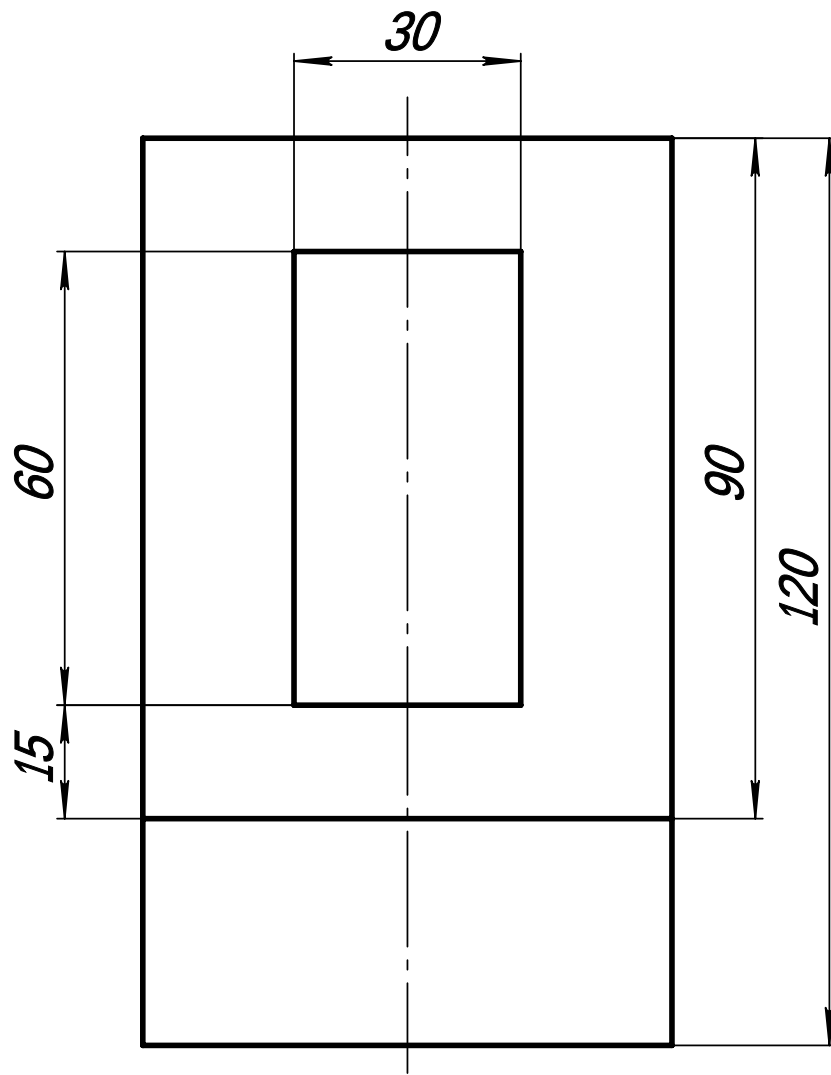


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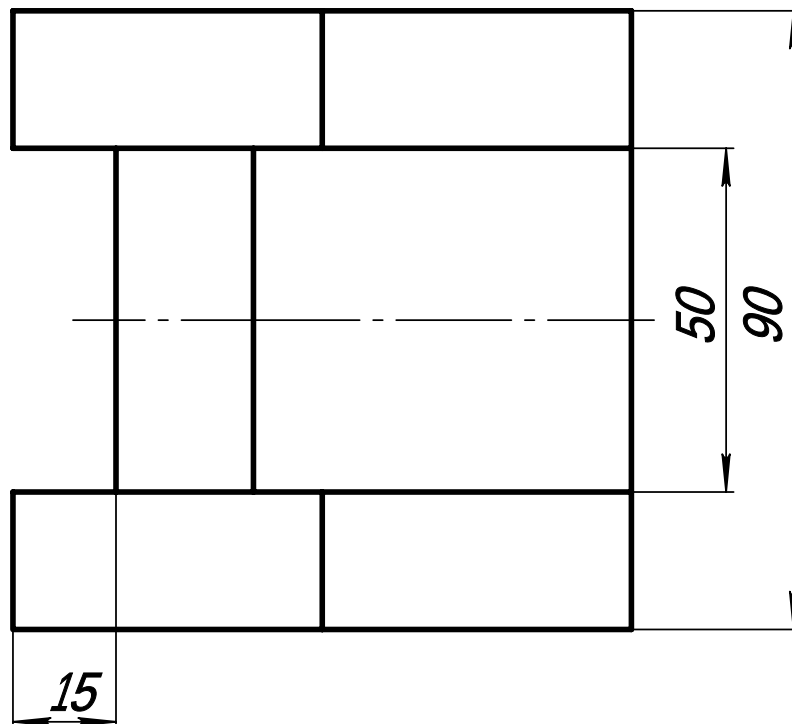
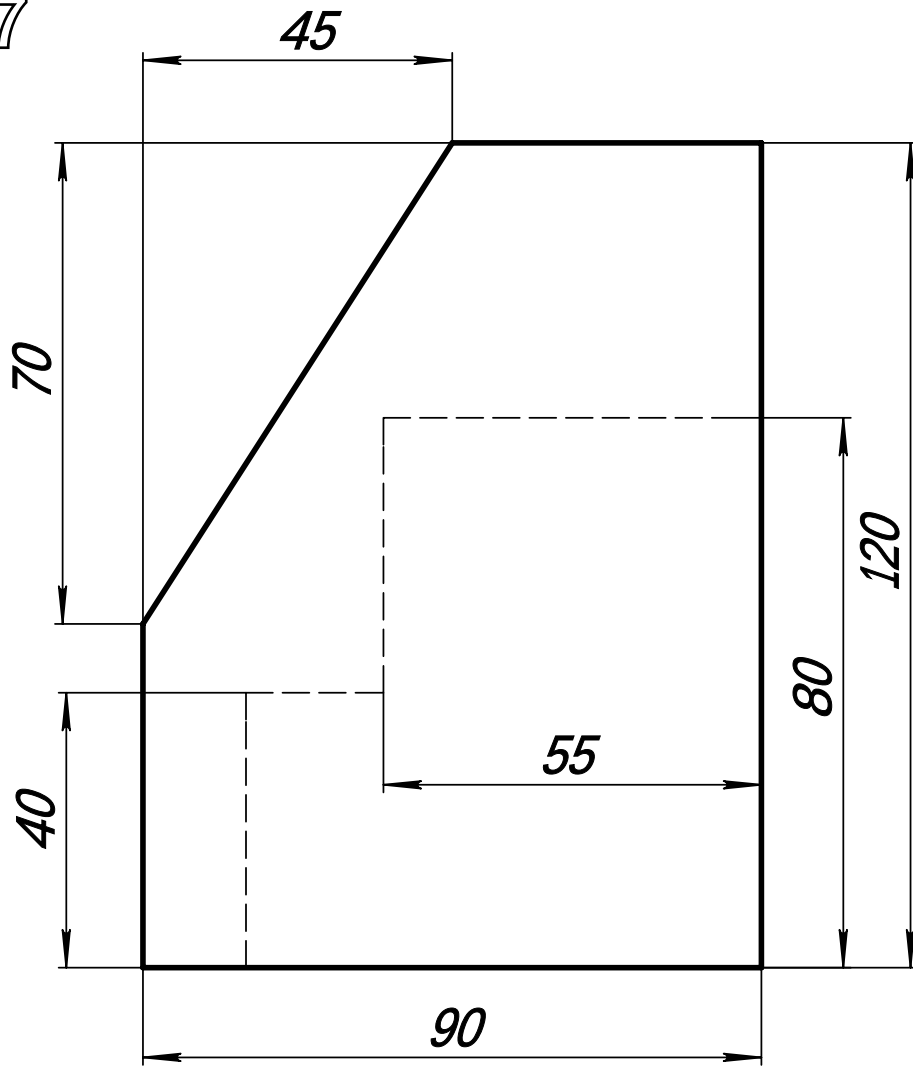


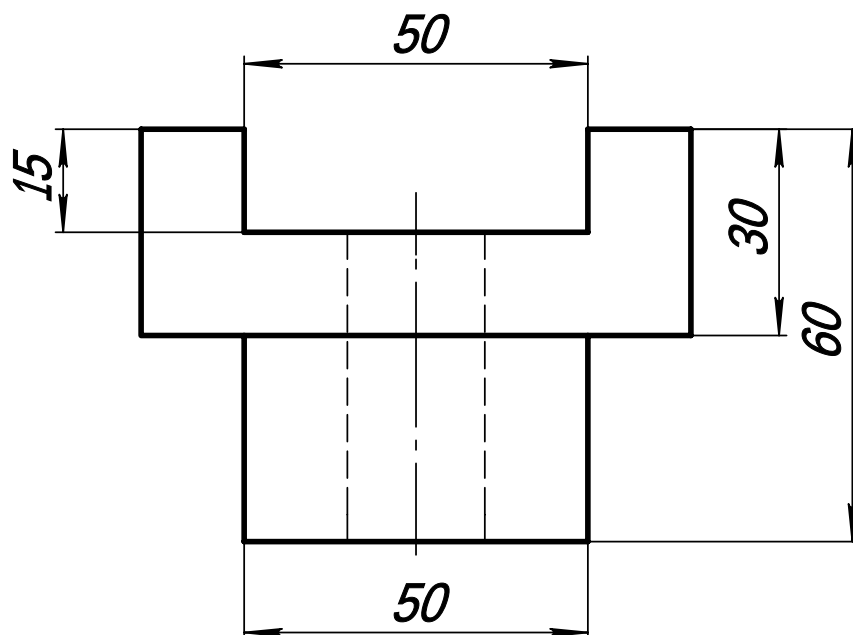
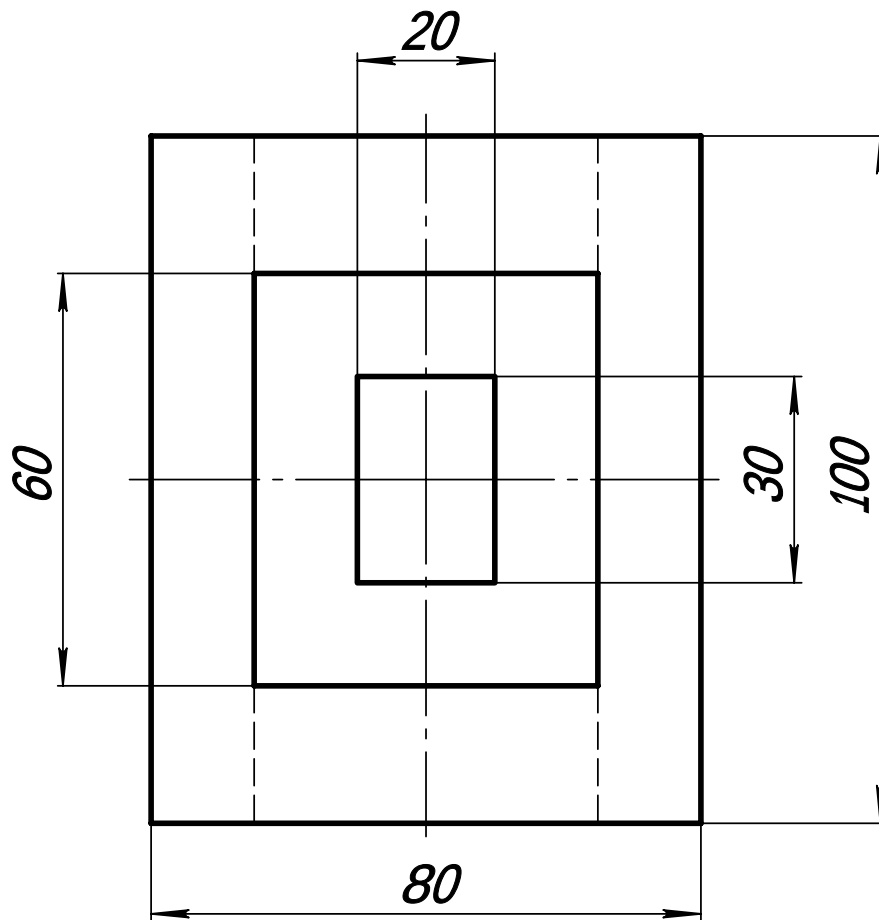
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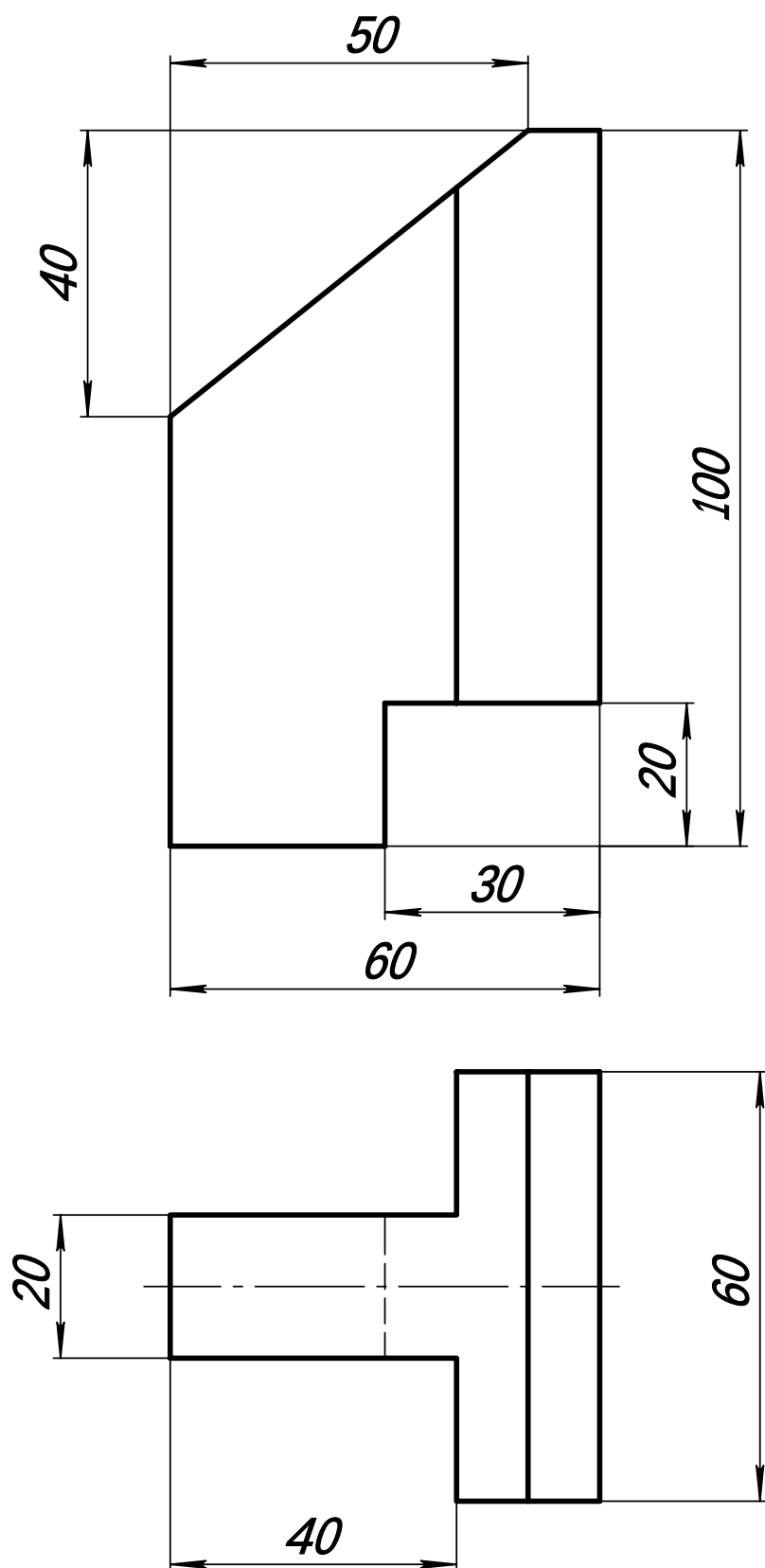
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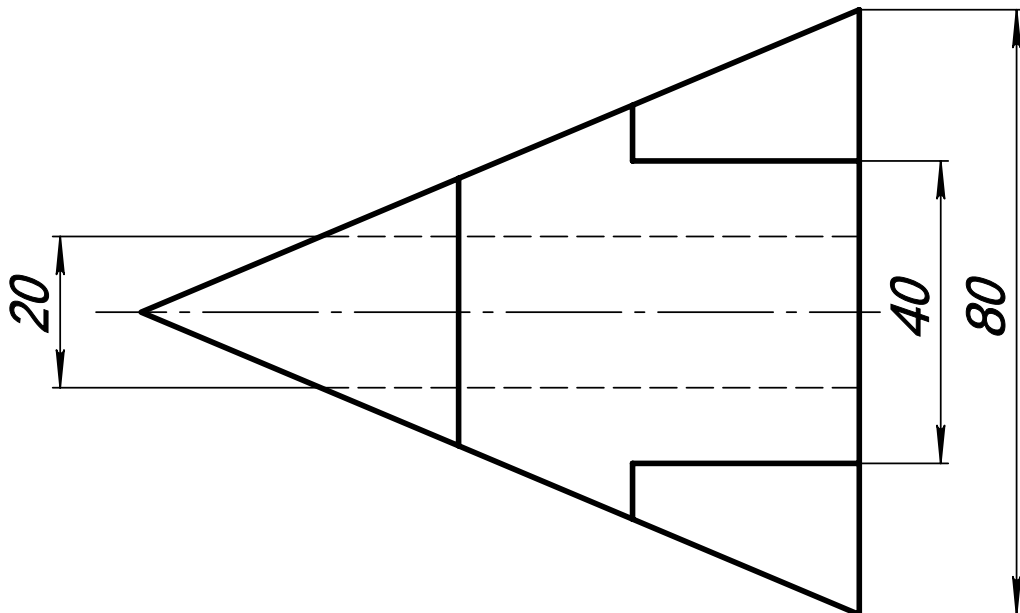
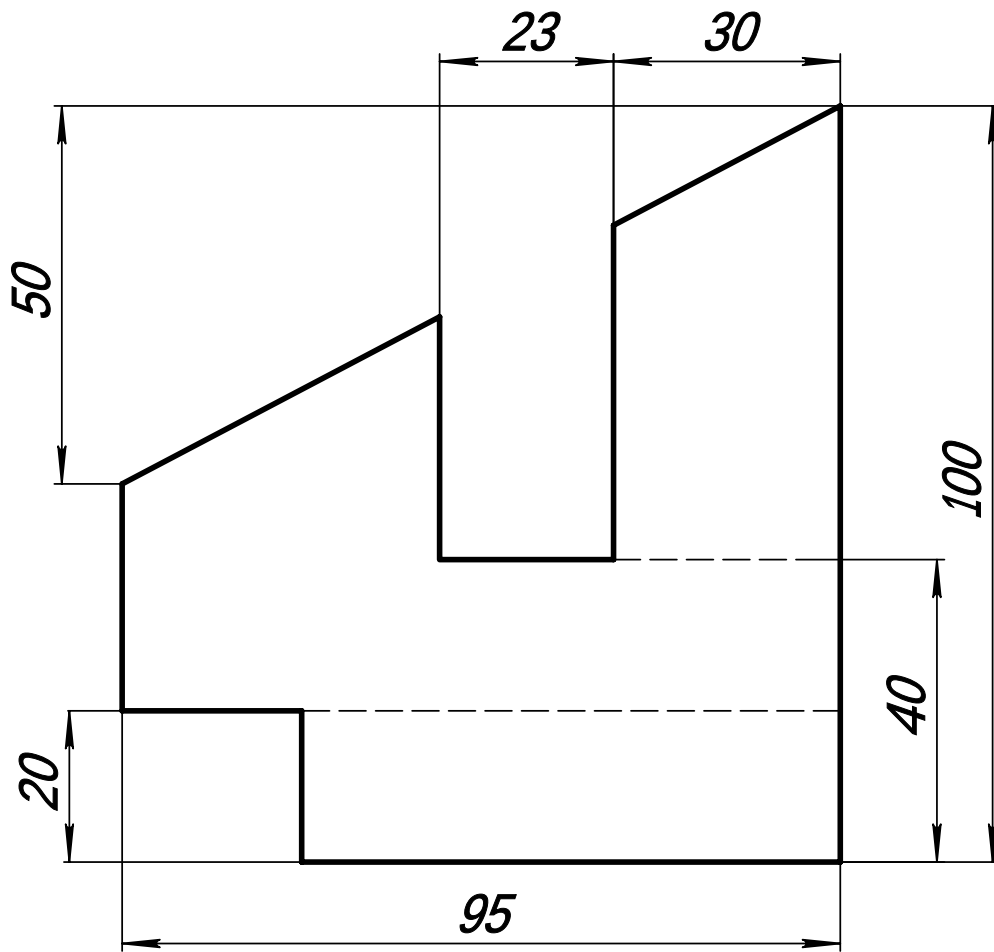


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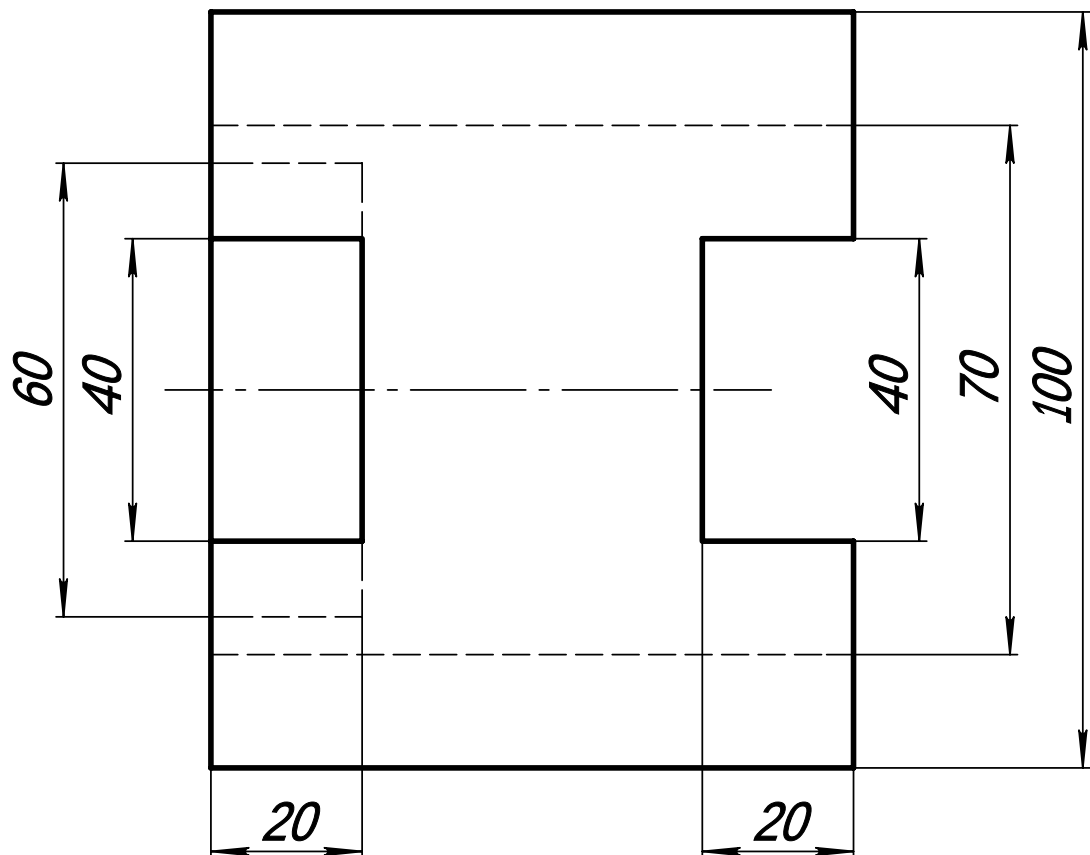
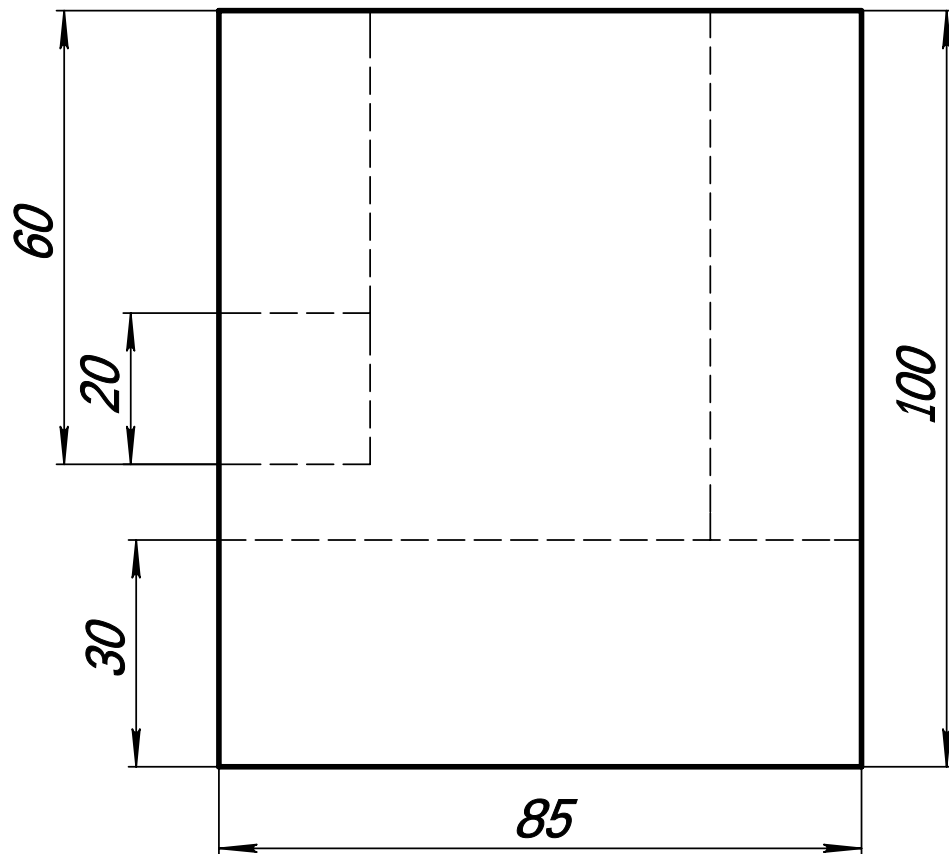


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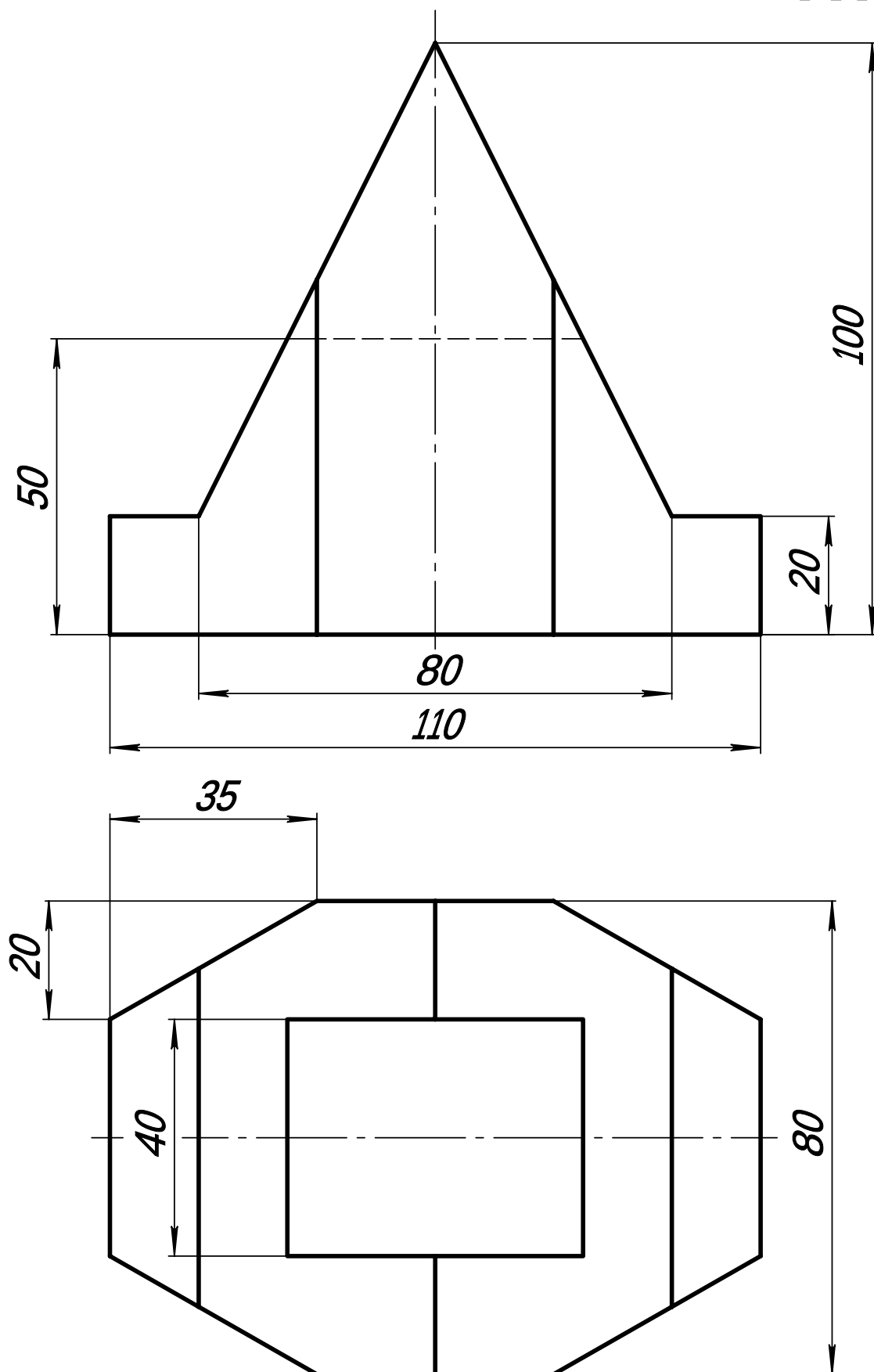


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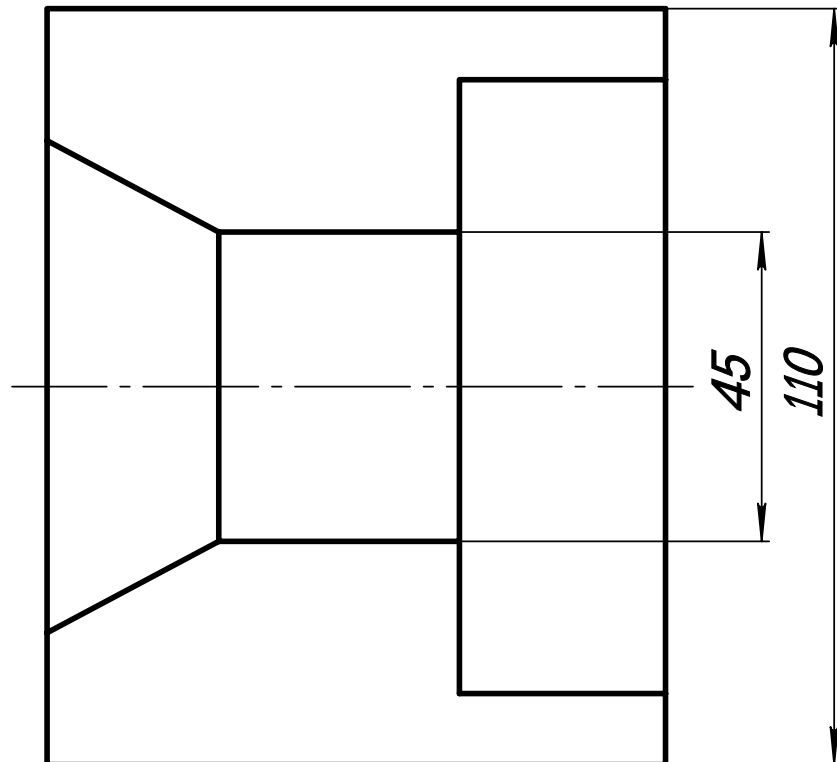
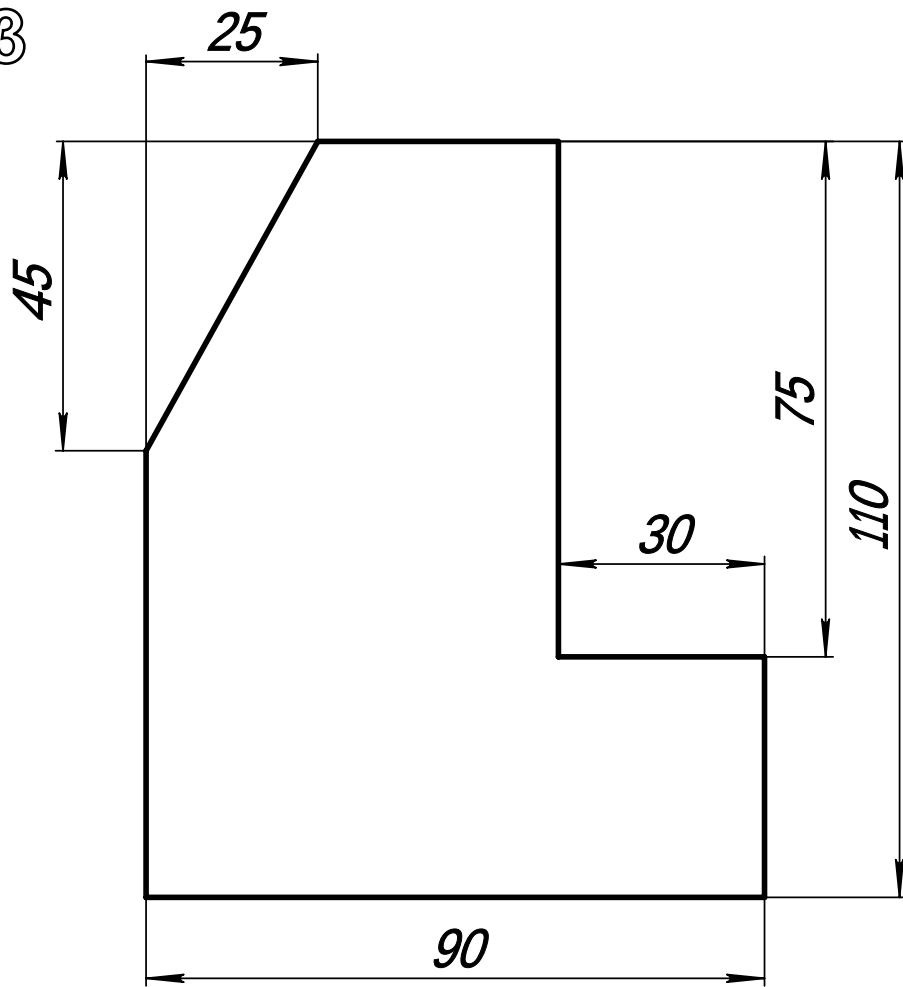


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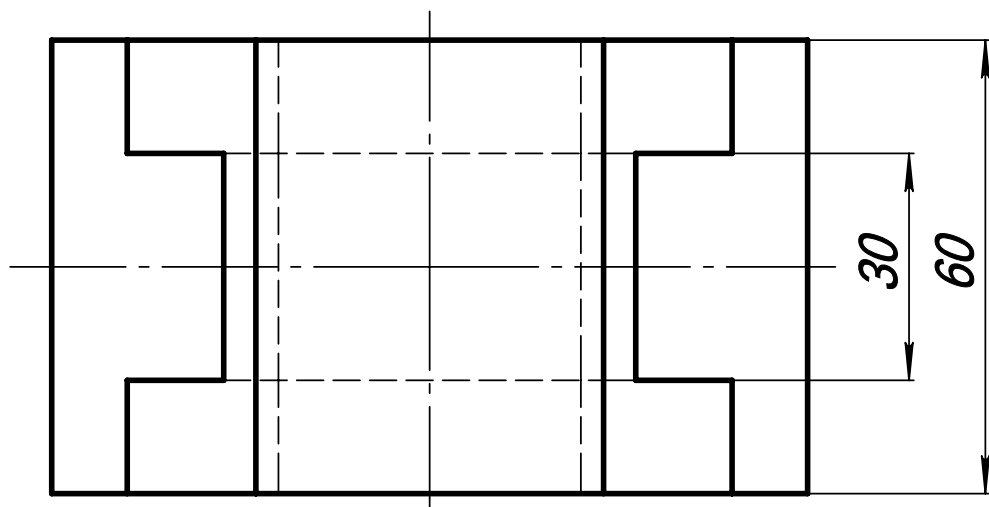
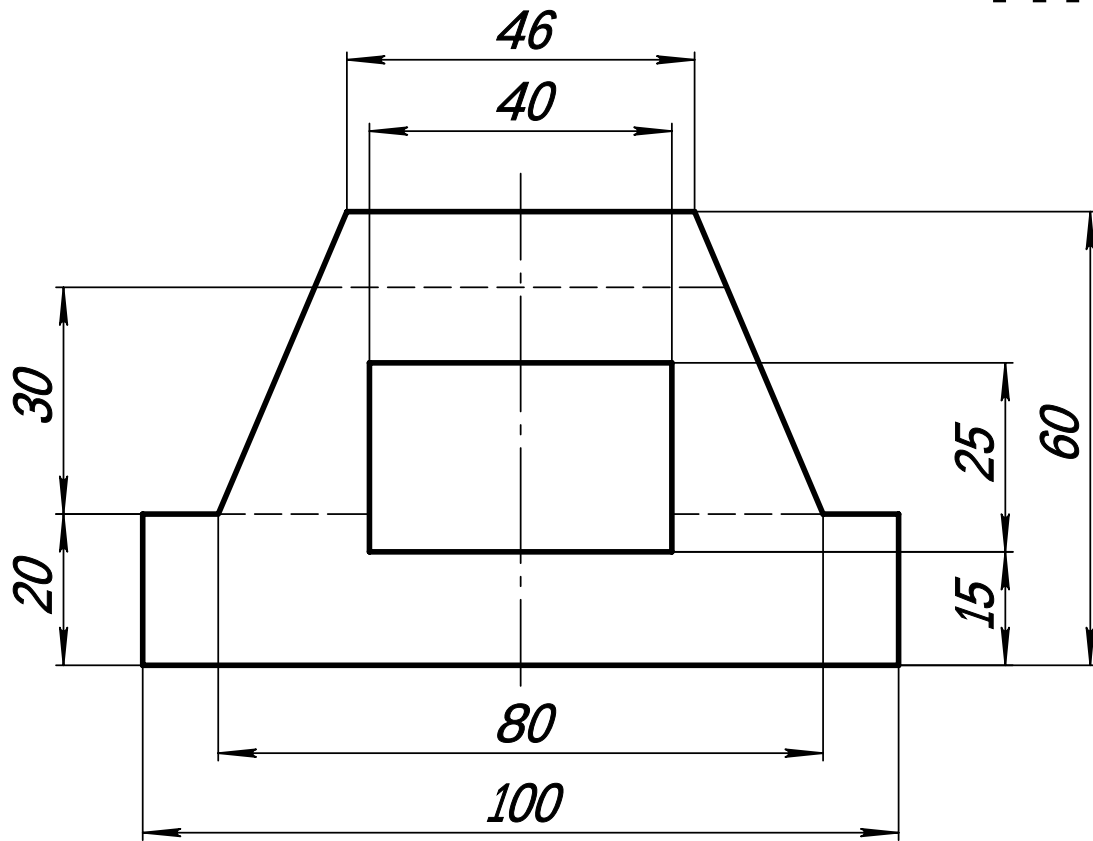


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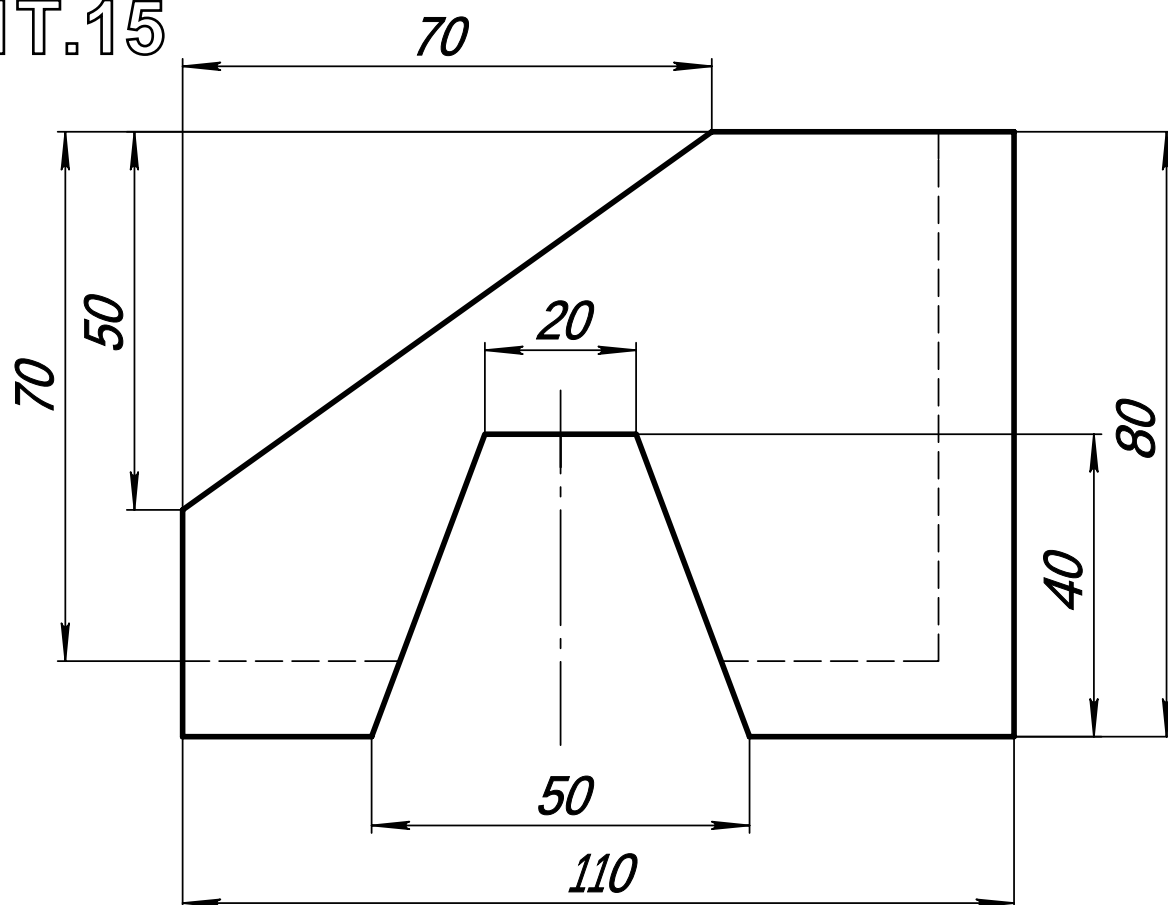


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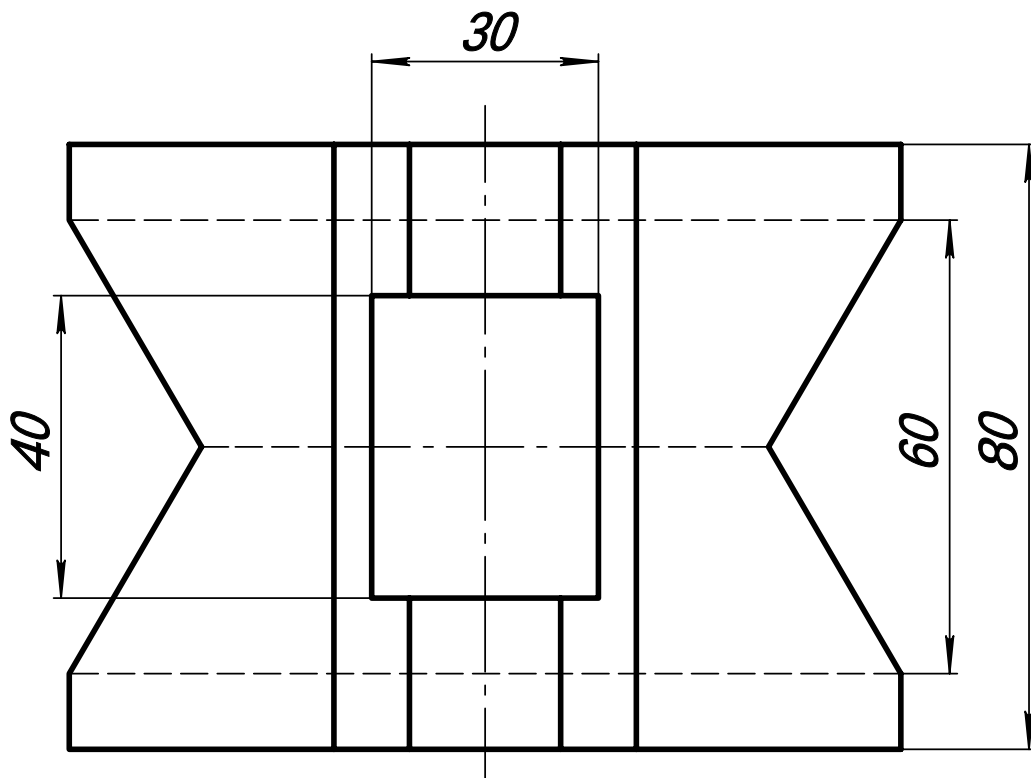
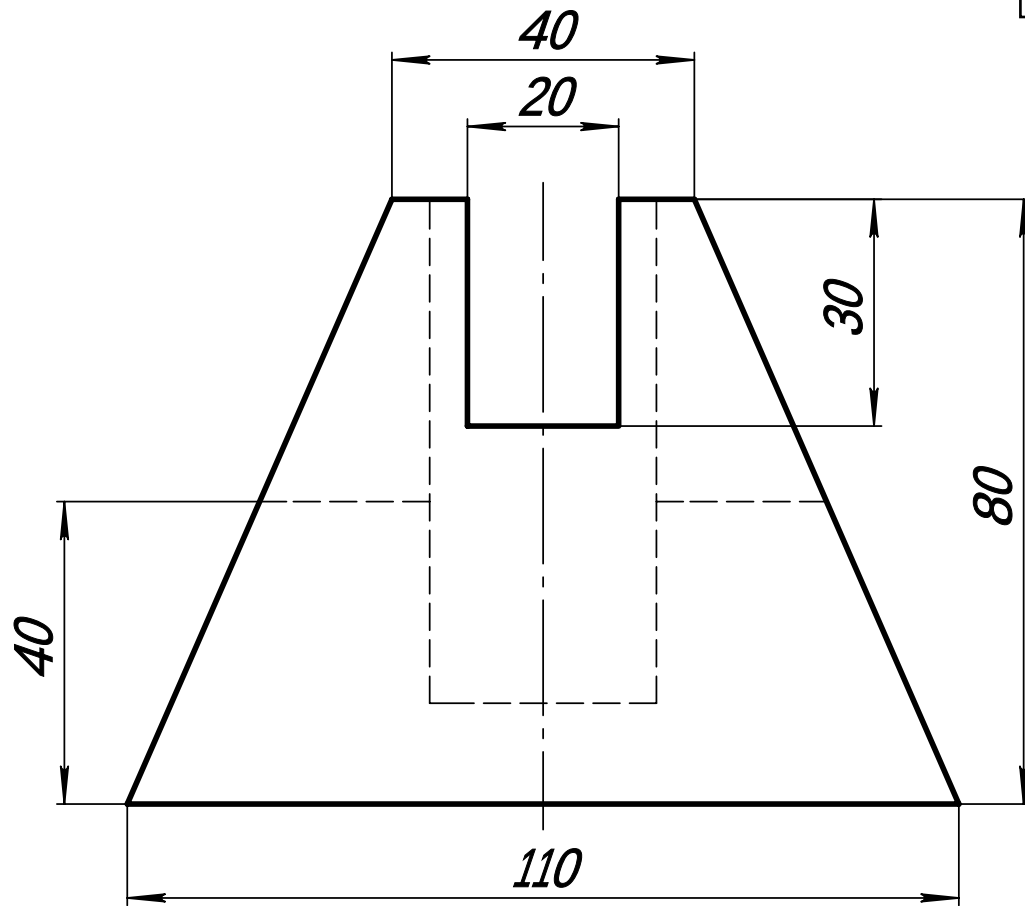


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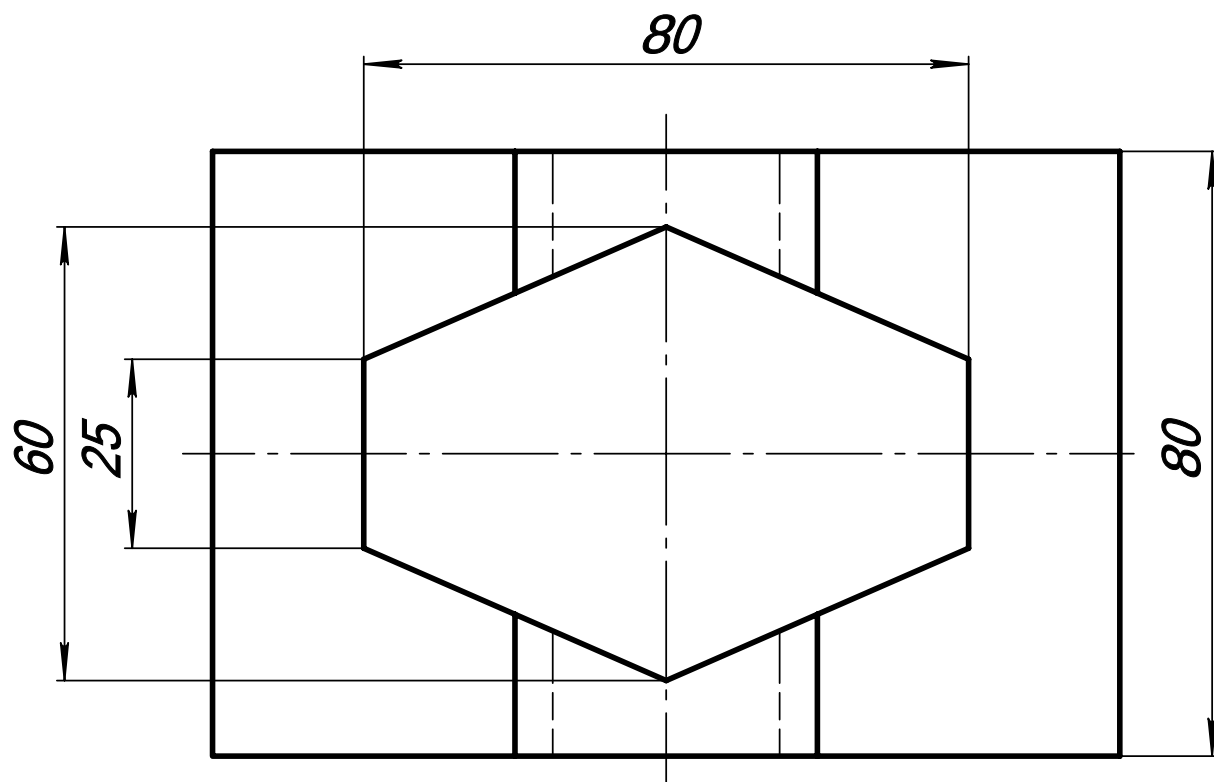
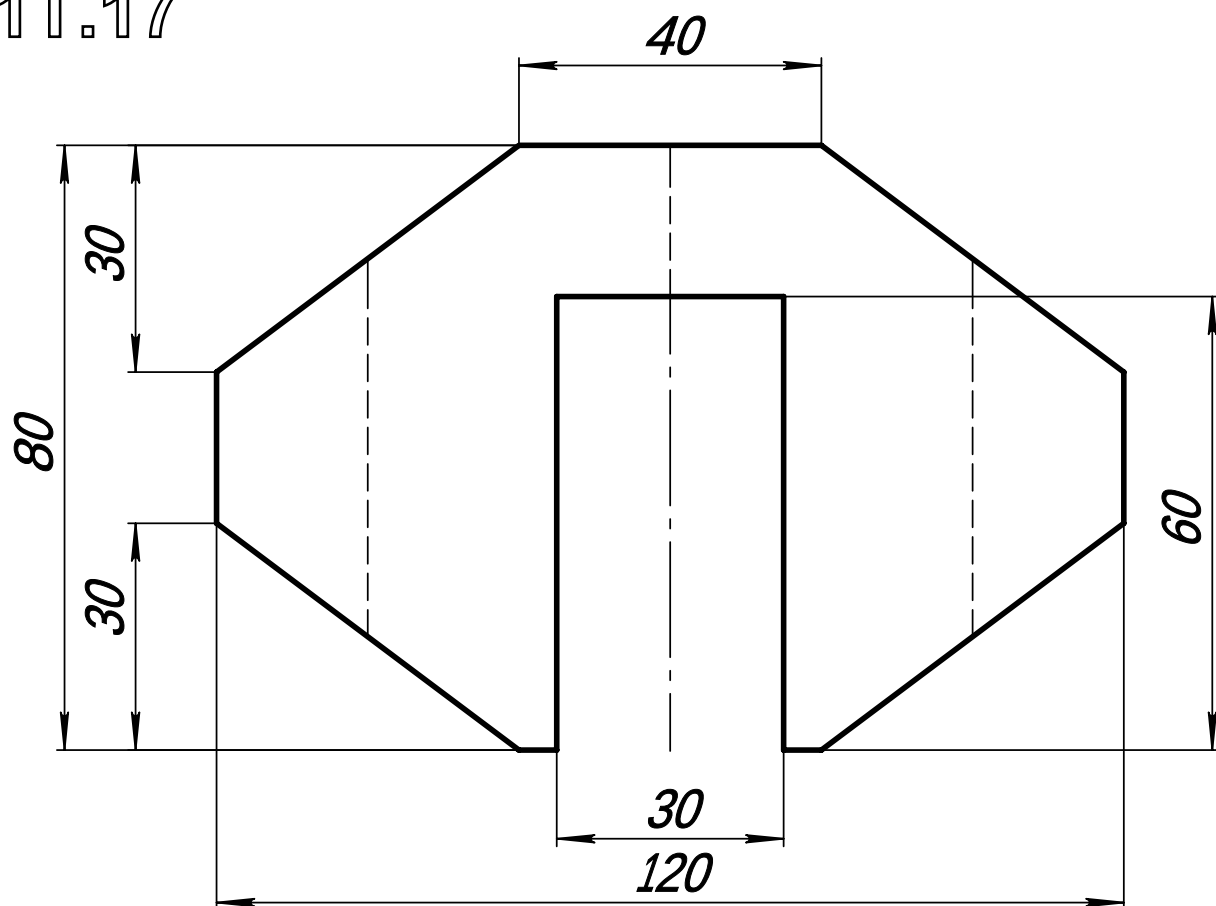


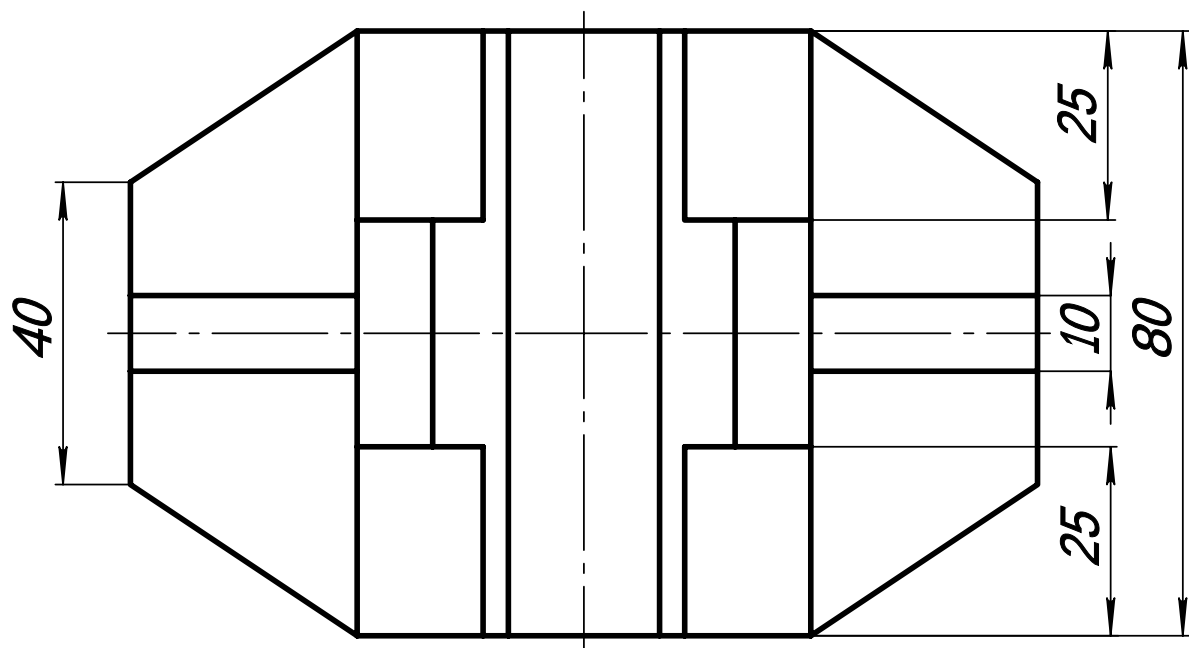
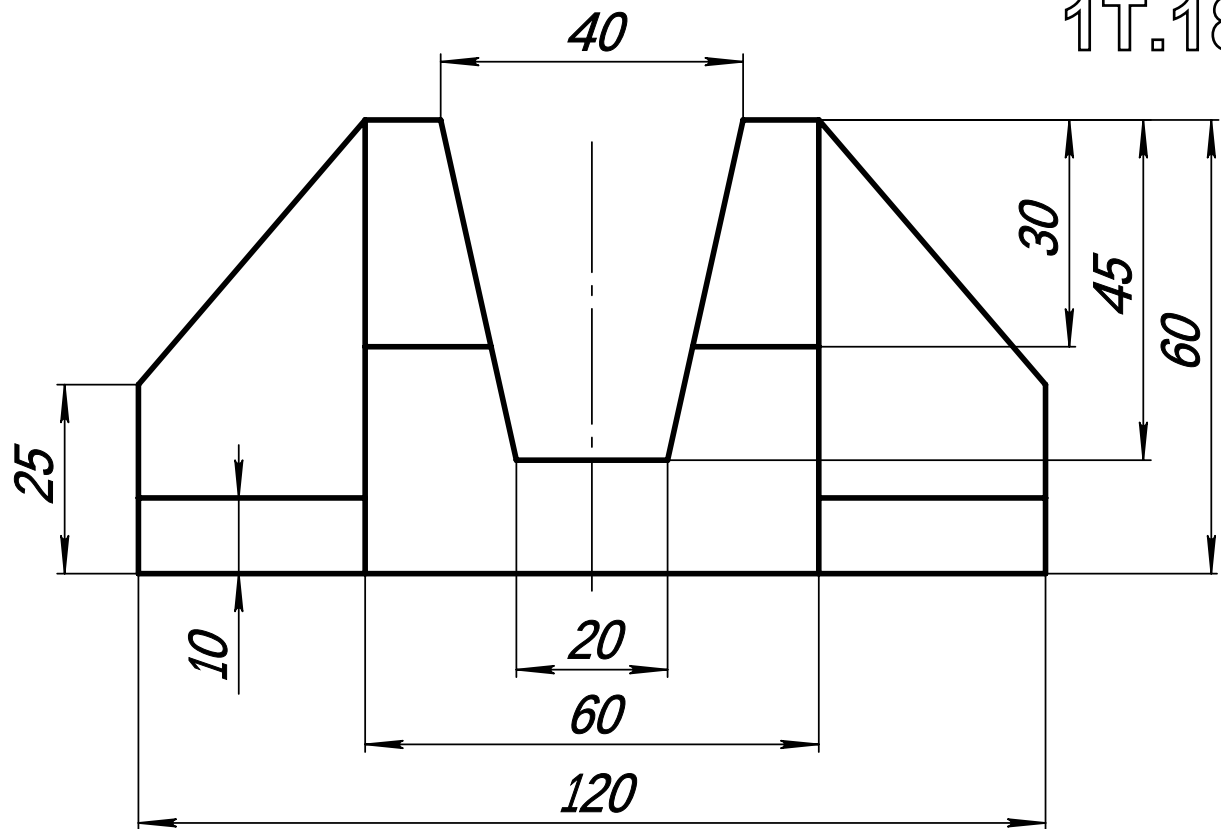
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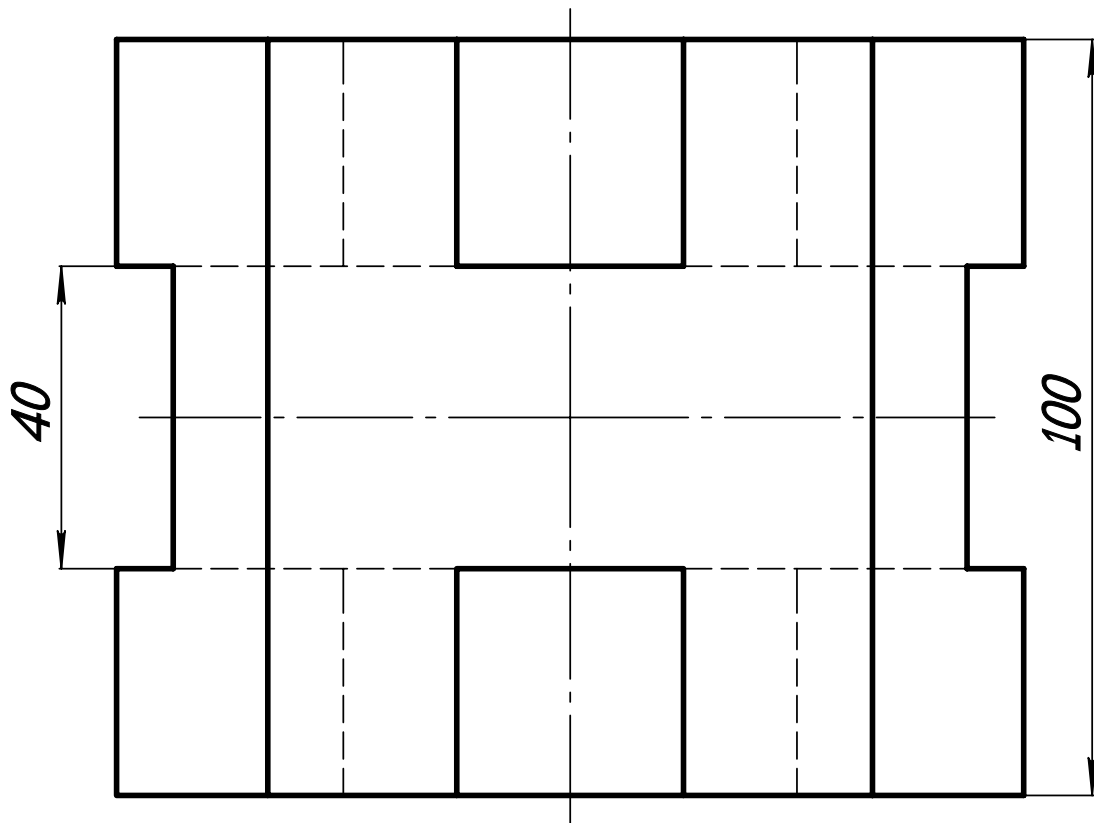
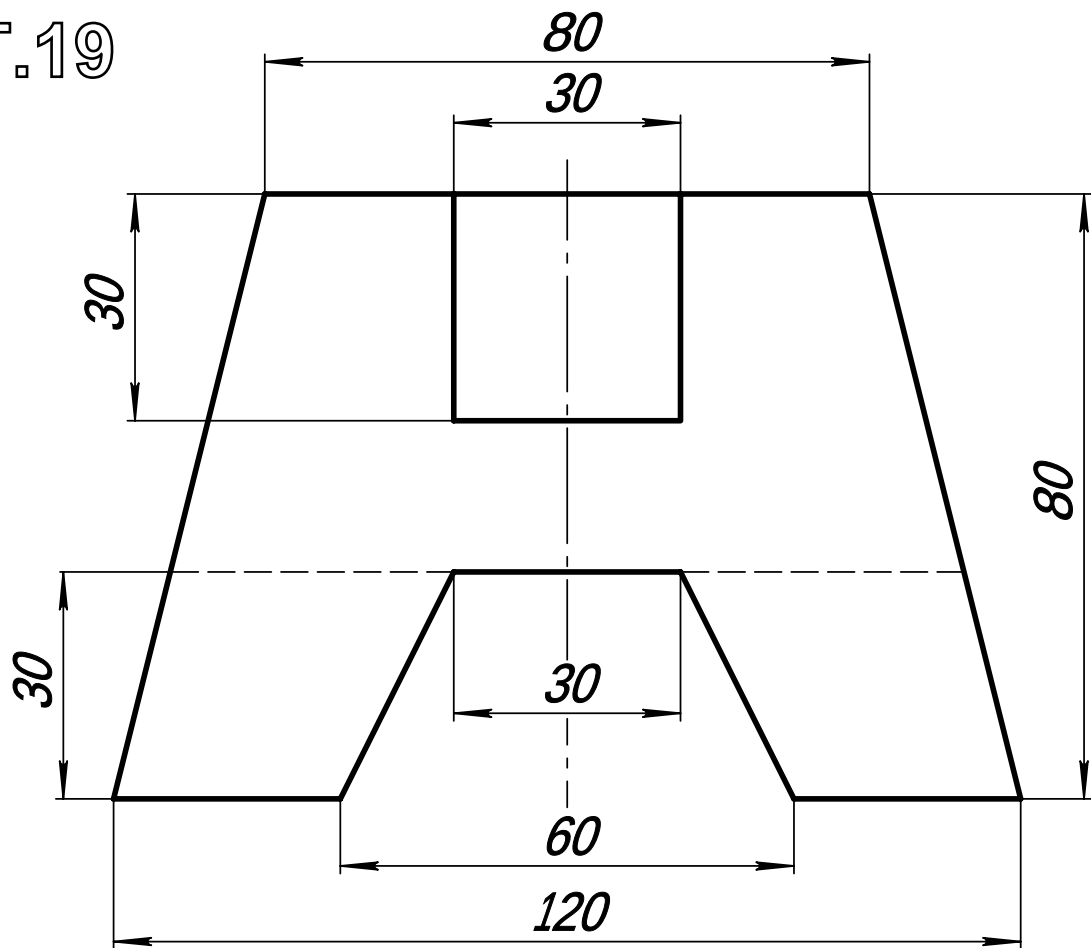
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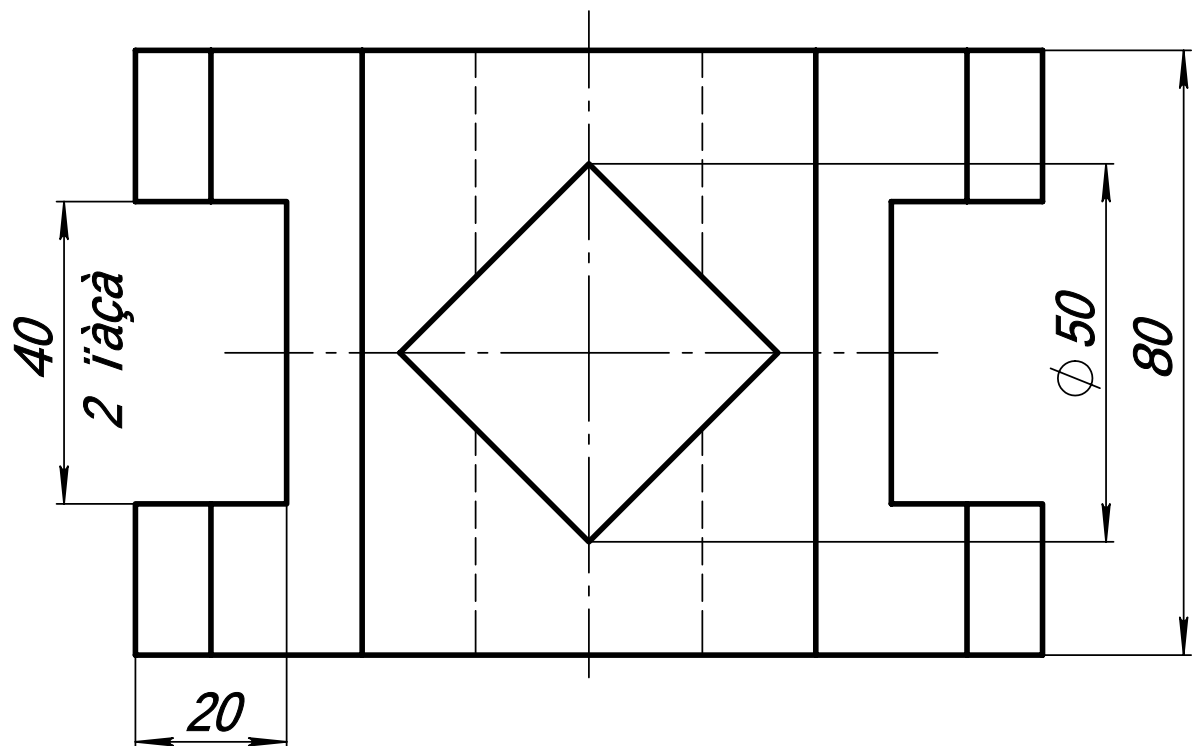




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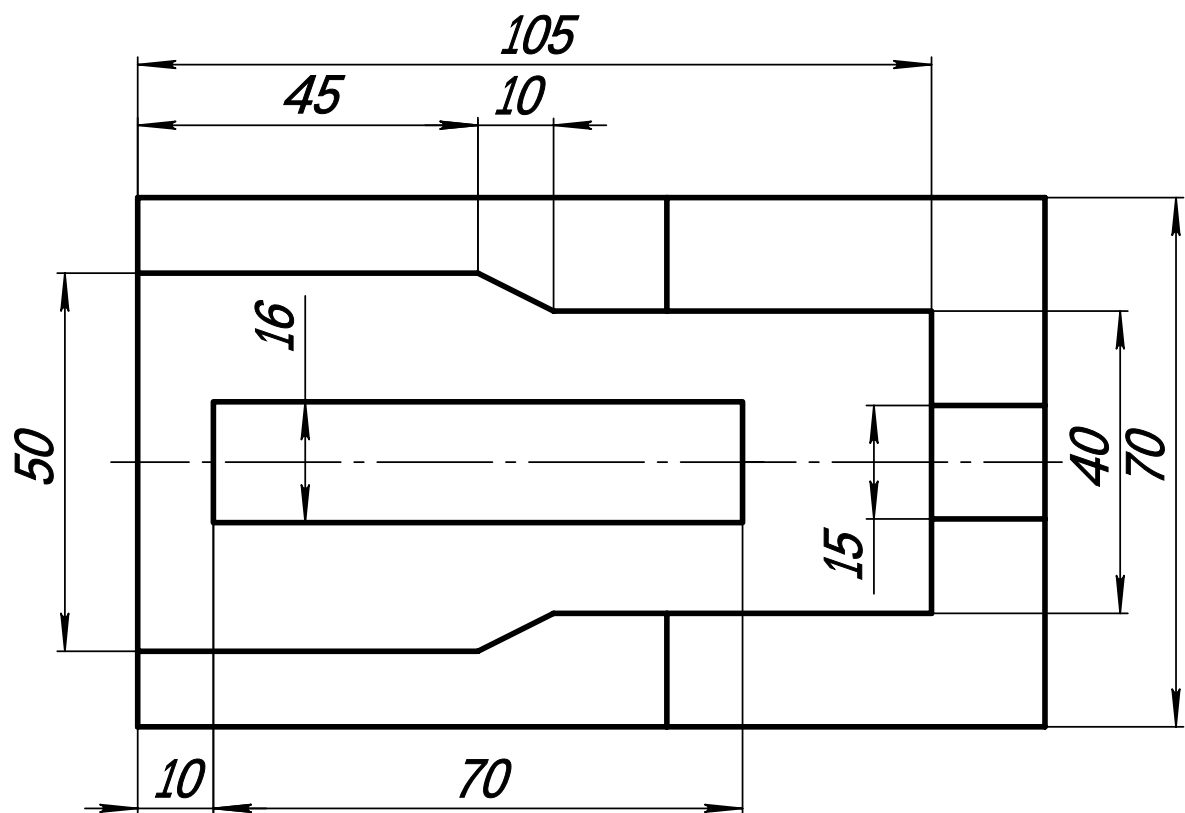
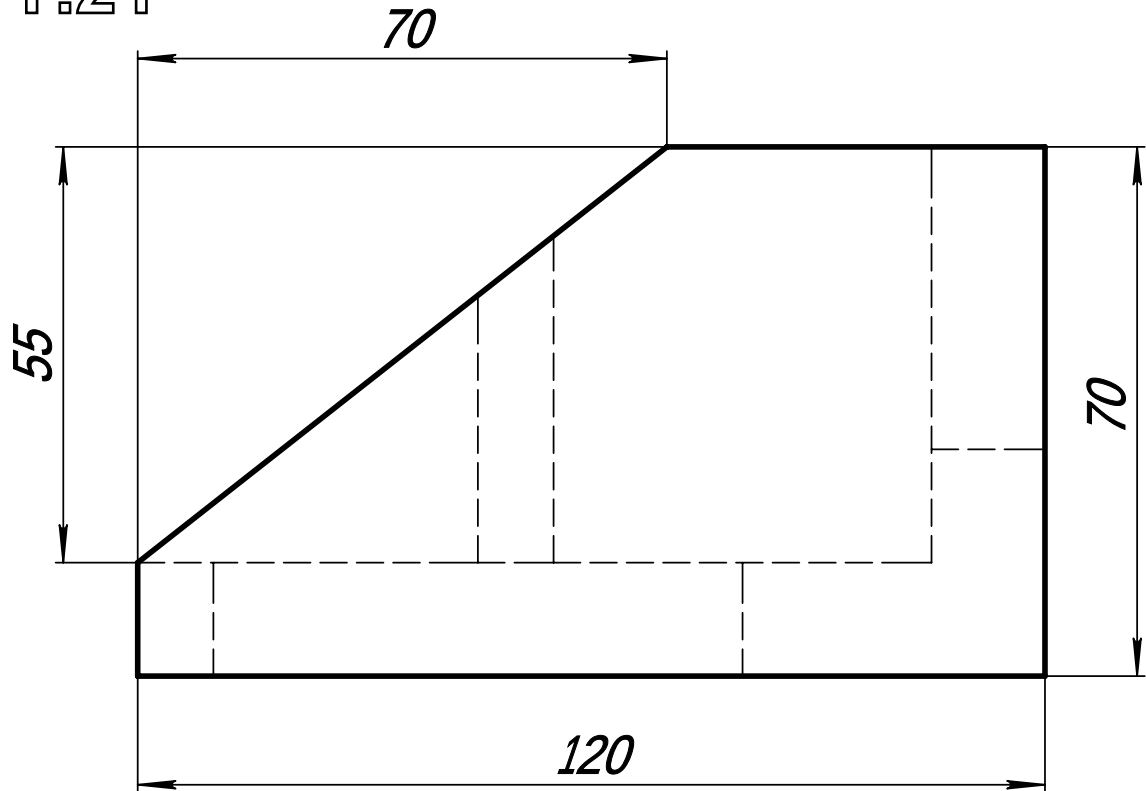


Technical drawing of a mechanical part, likely a casting, showing dimensions in millimeters (mm). The part is a symmetrical, stepped block with a central rectangular cutout. The overall width is 120 mm, and the overall height is 60 mm. The base is 100 mm wide. The top surface is 60 mm wide. The central cutout is 30 mm wide and 30 mm high. The part has a total height of 60 mm, with a base of 15 mm and a top section of 30 mm. The side profile shows a trapezoidal shape with a top width of 60 mm and a base width of 100 mm. The drawing includes dimension lines and arrows indicating the measurements.



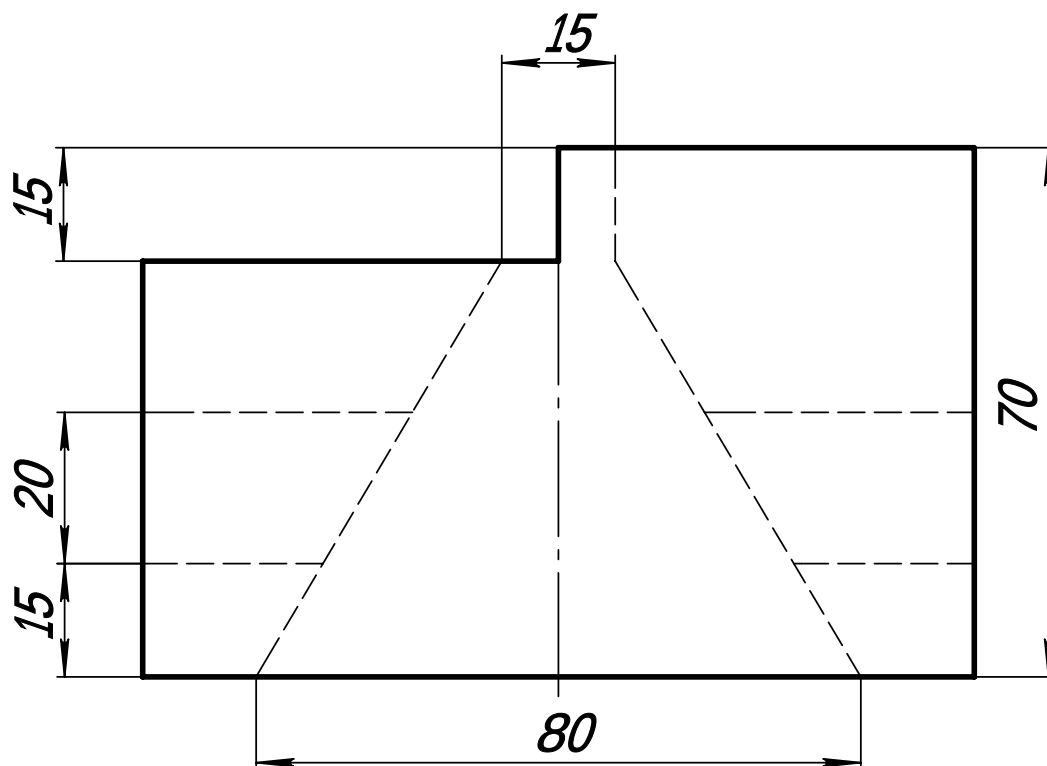
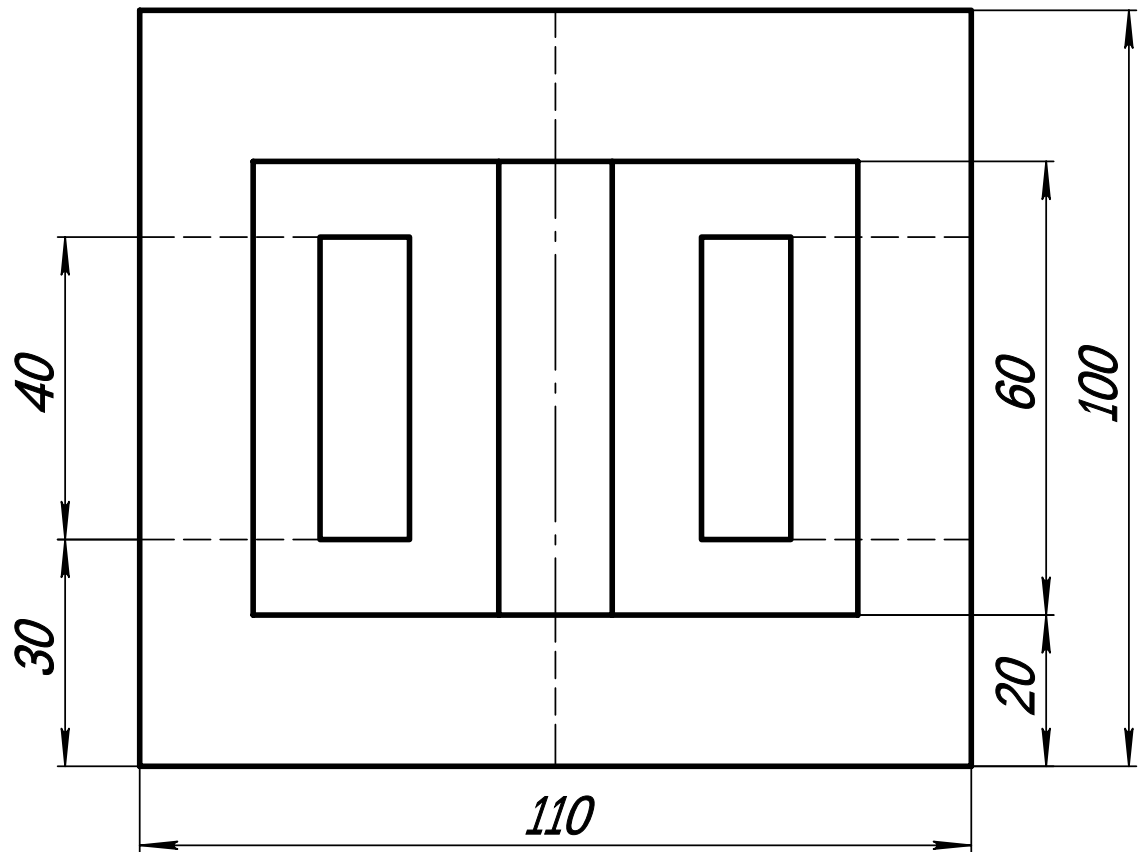


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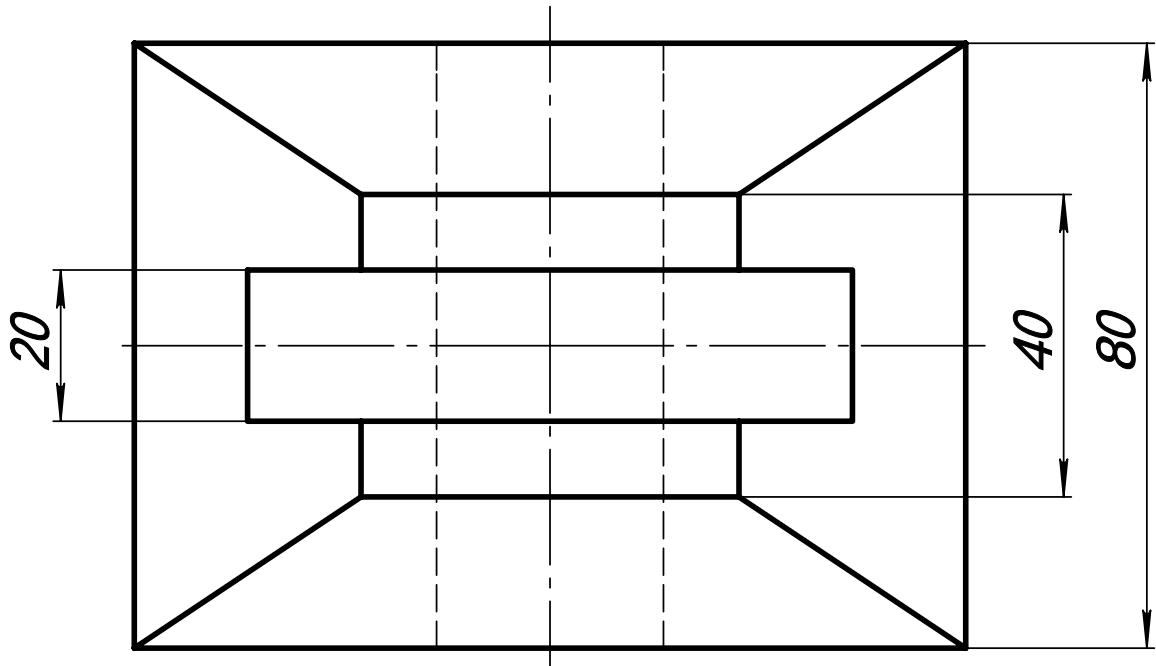
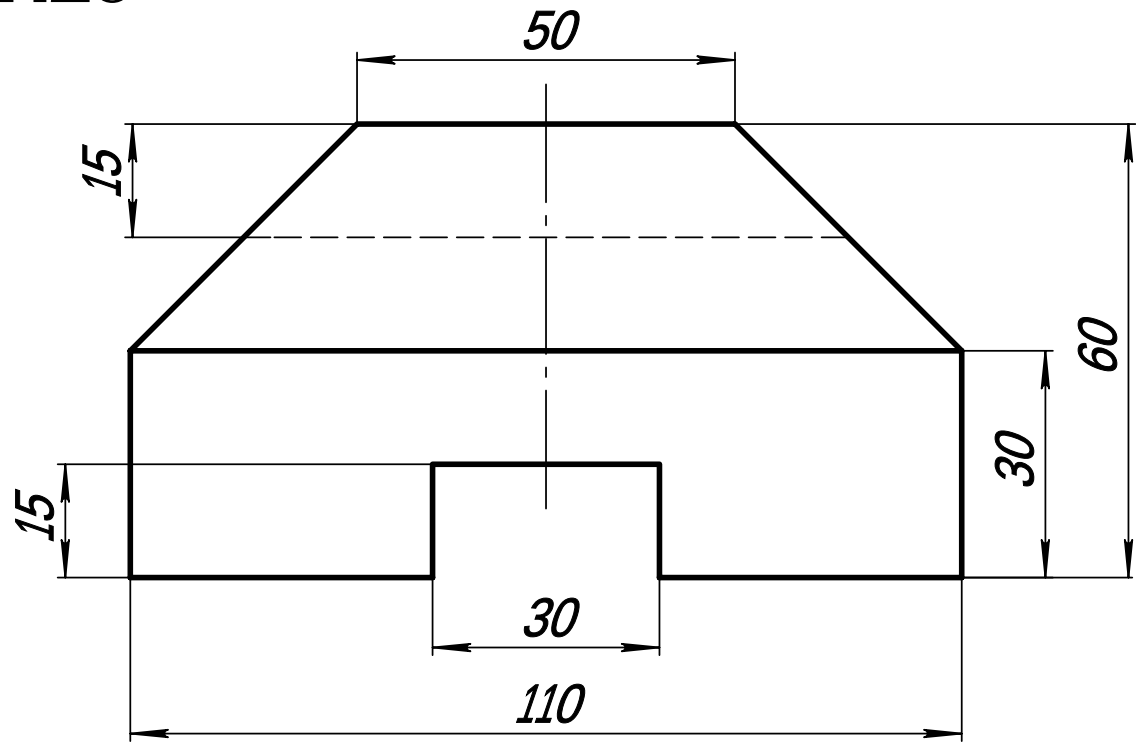


1T.22



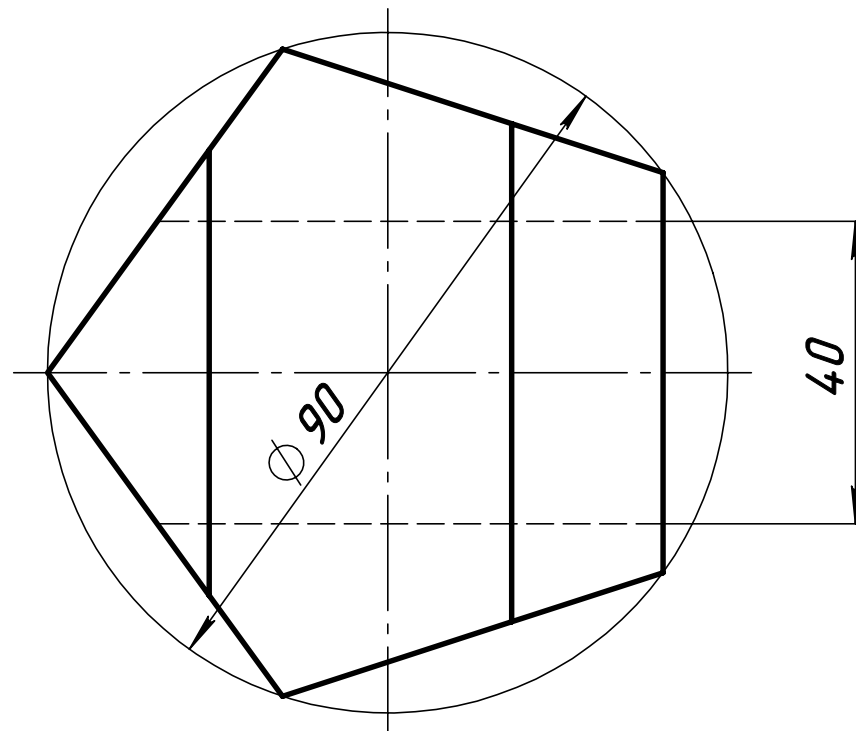
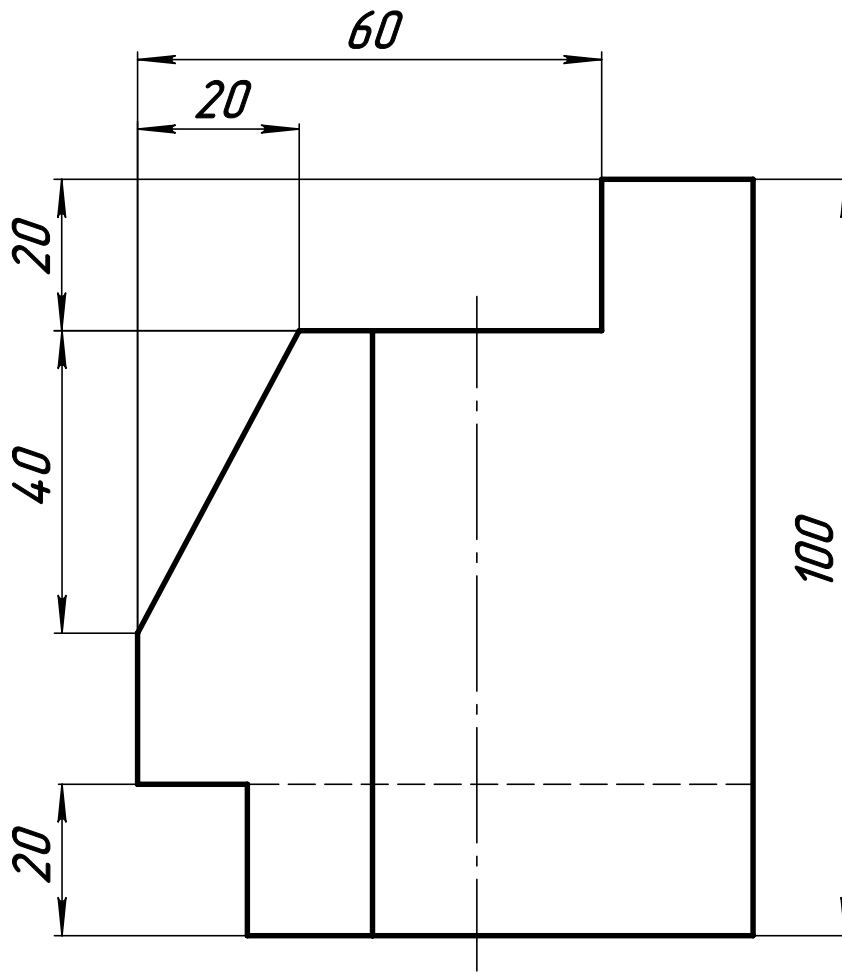


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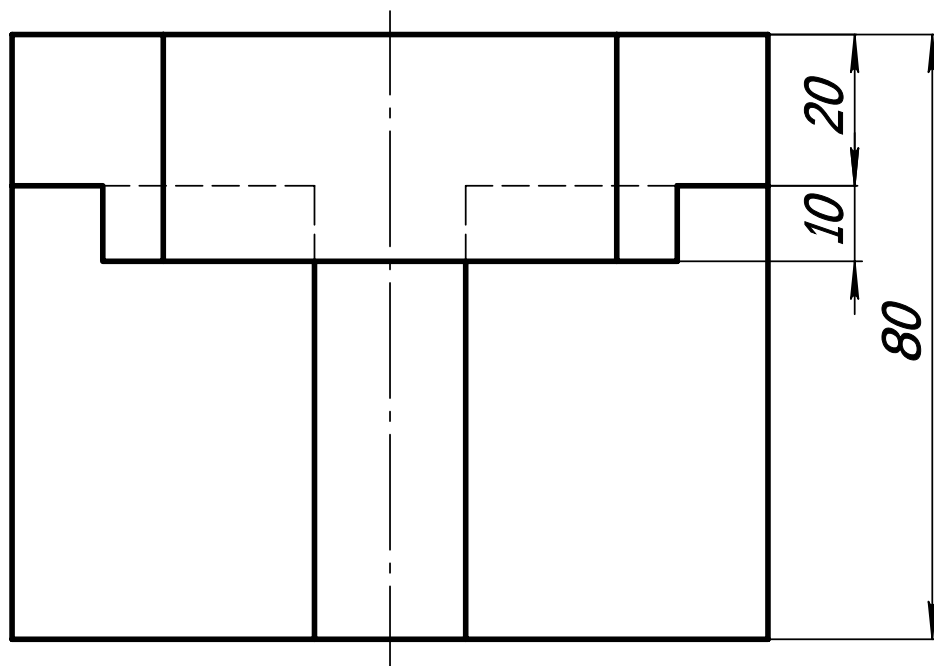
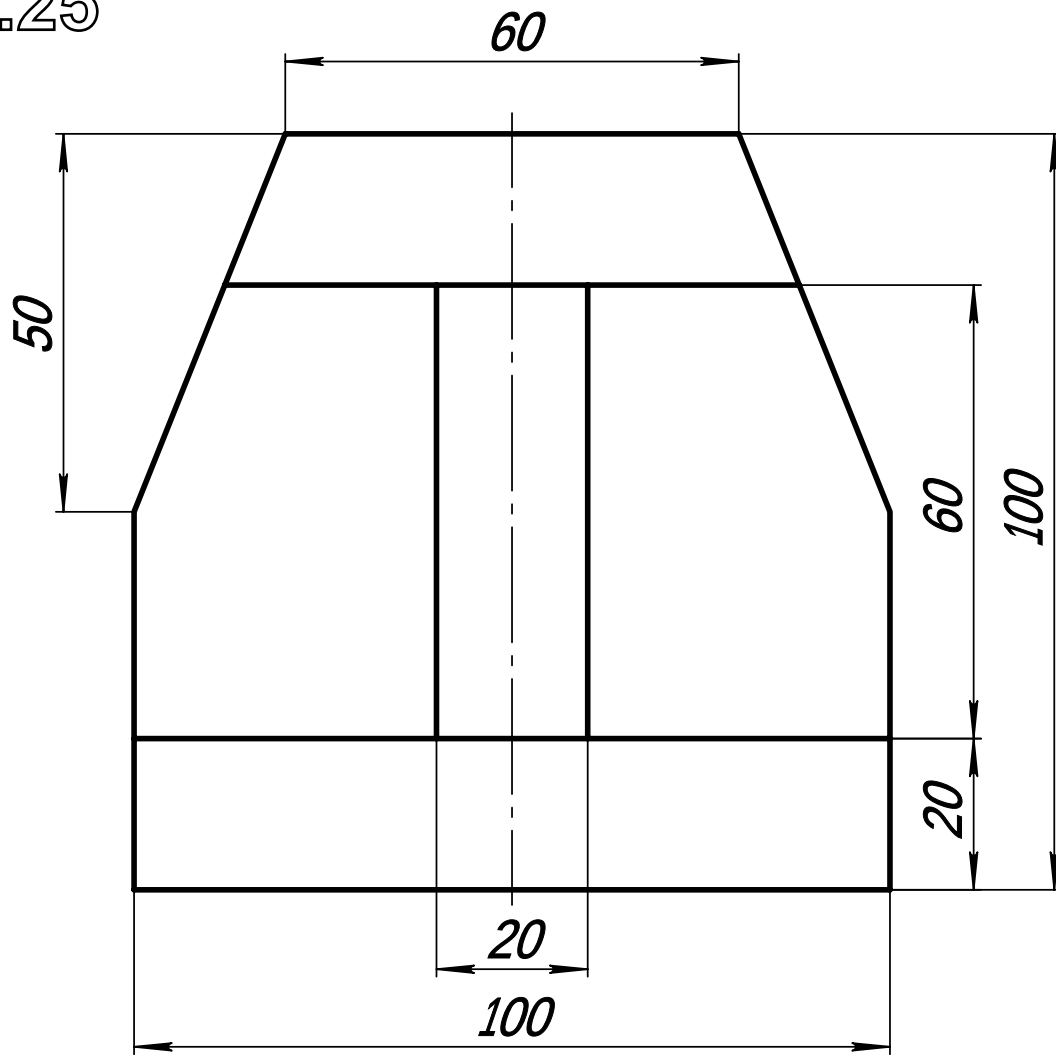


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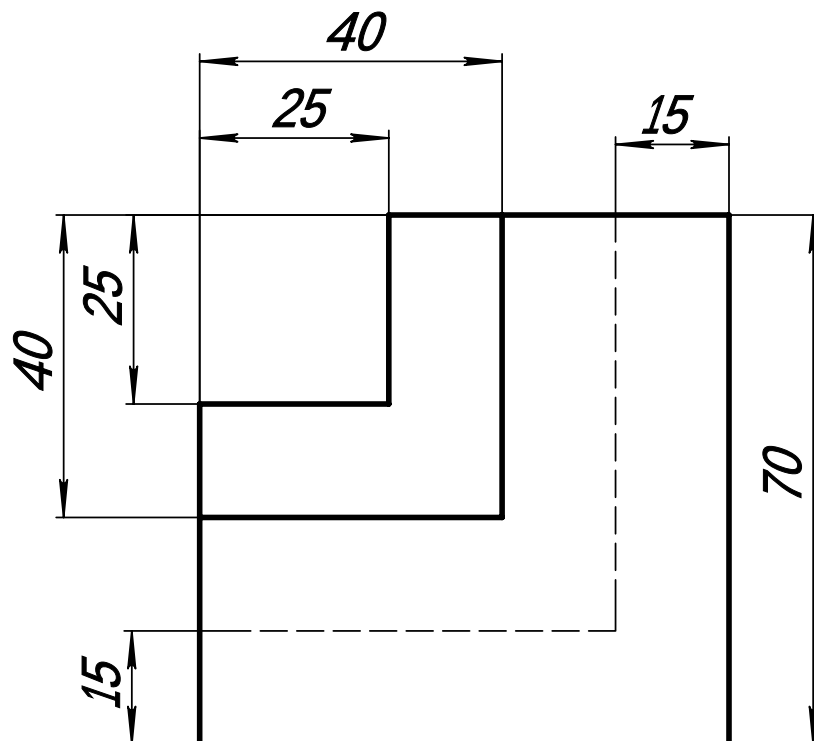
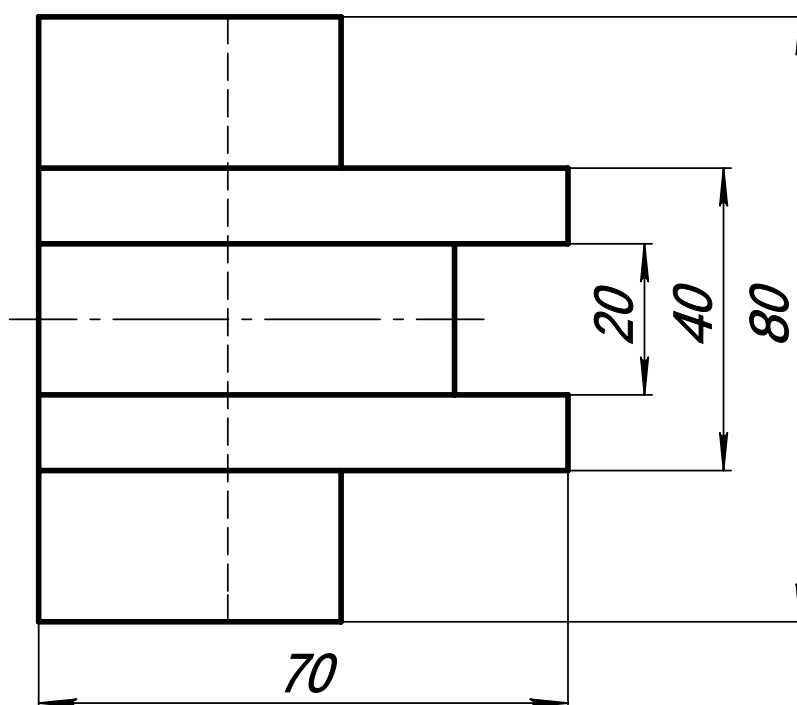


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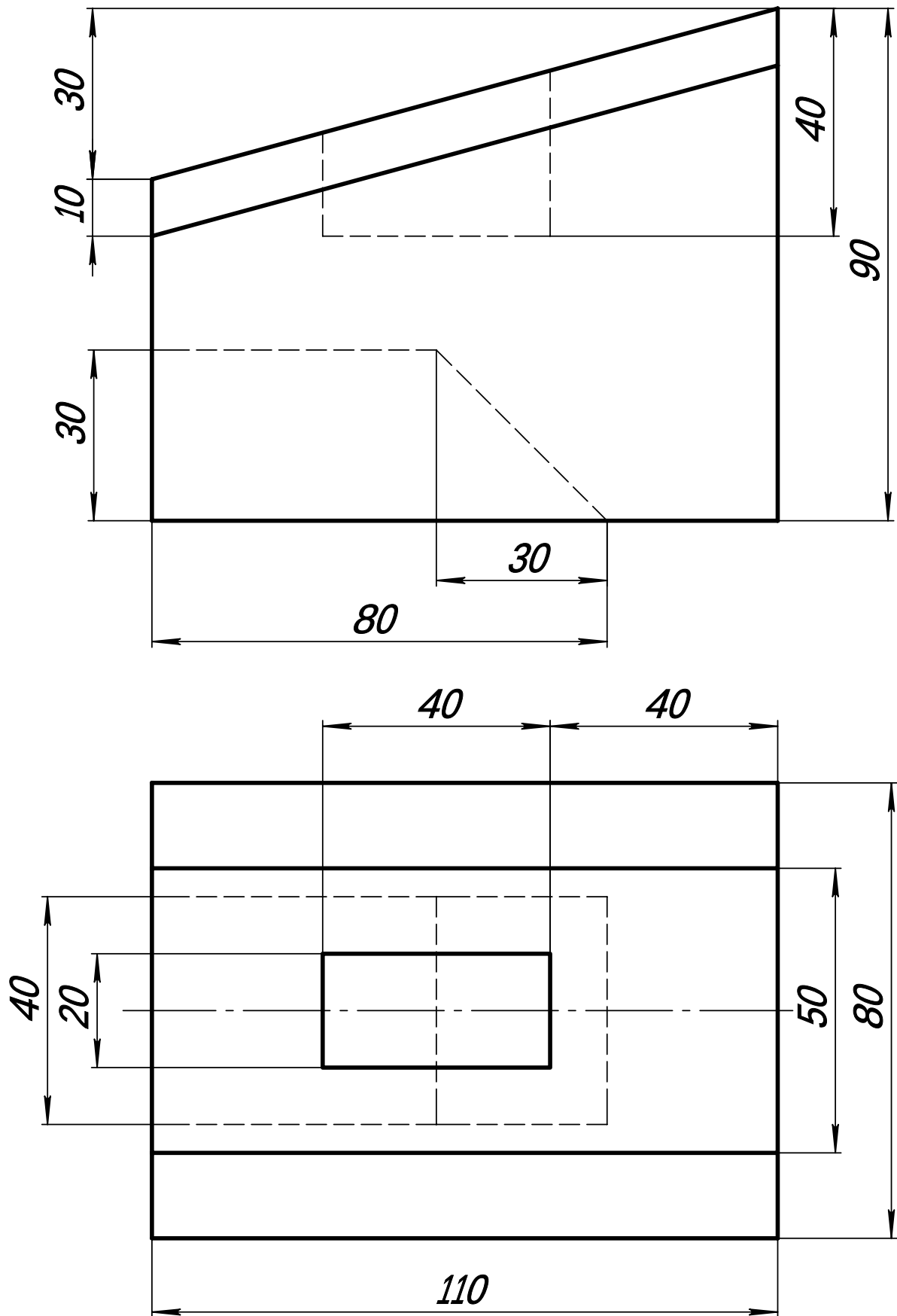


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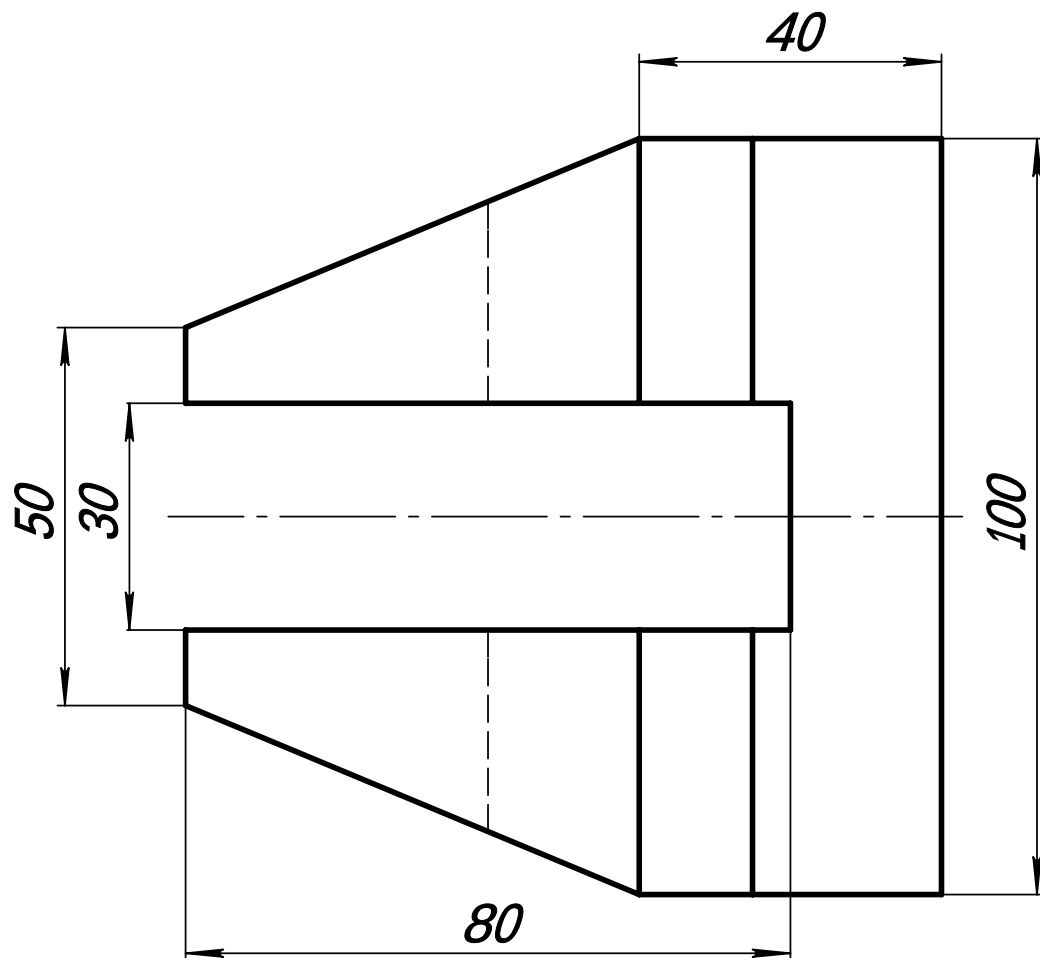
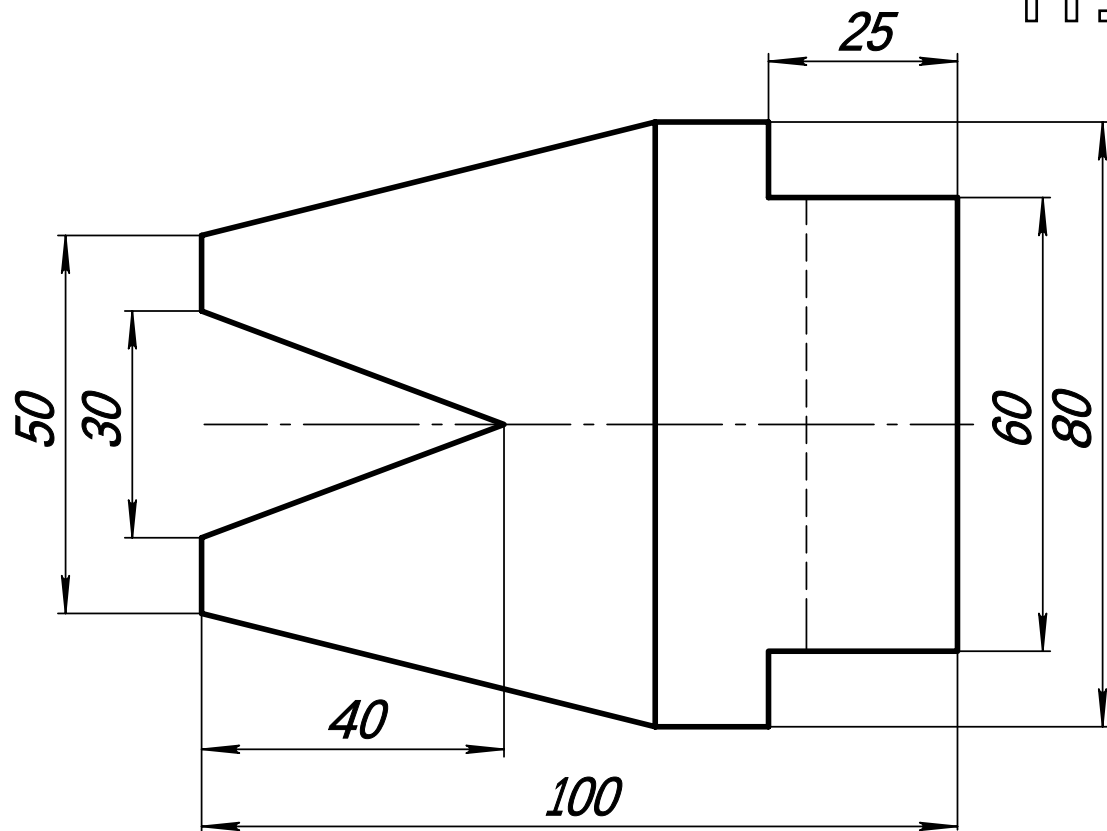


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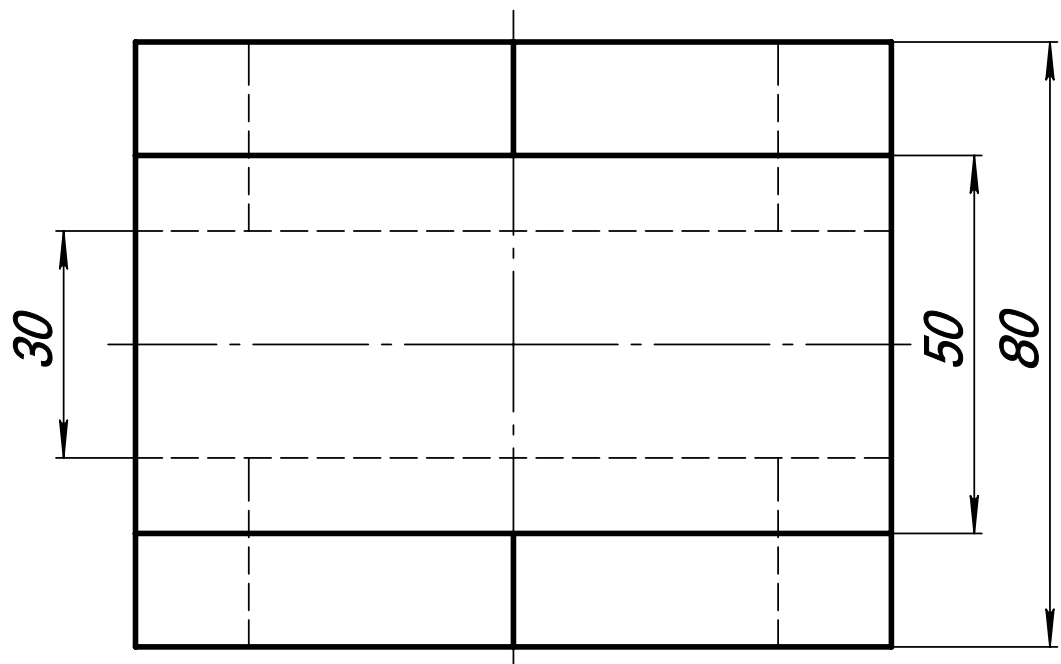
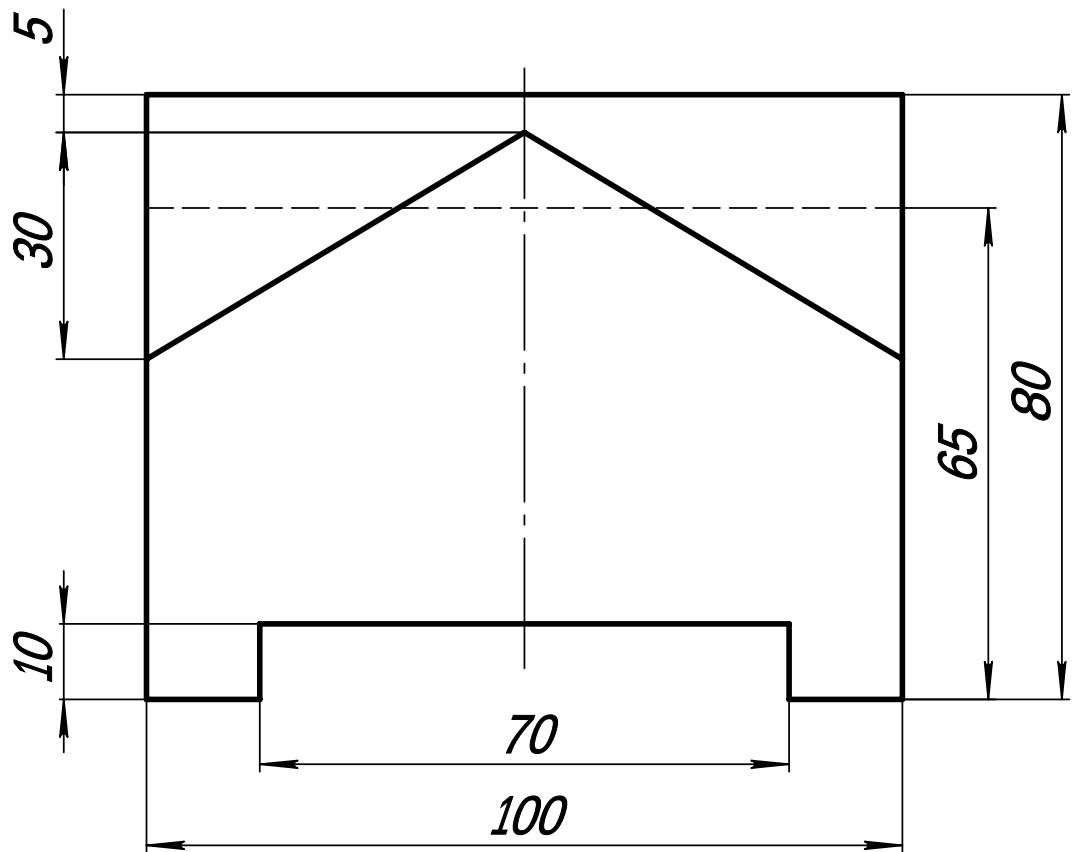


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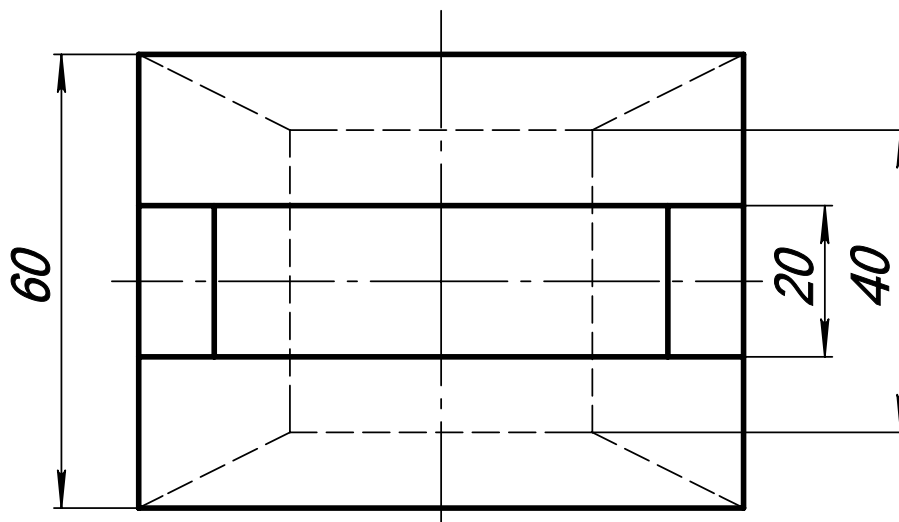
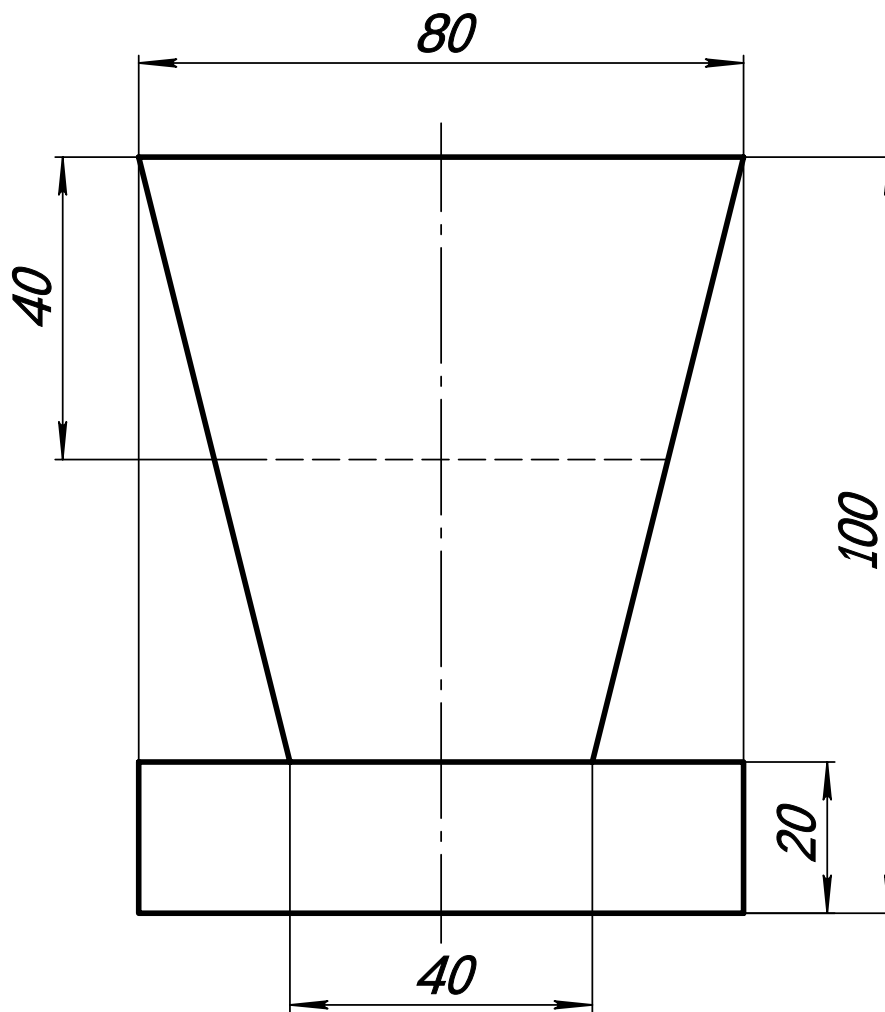


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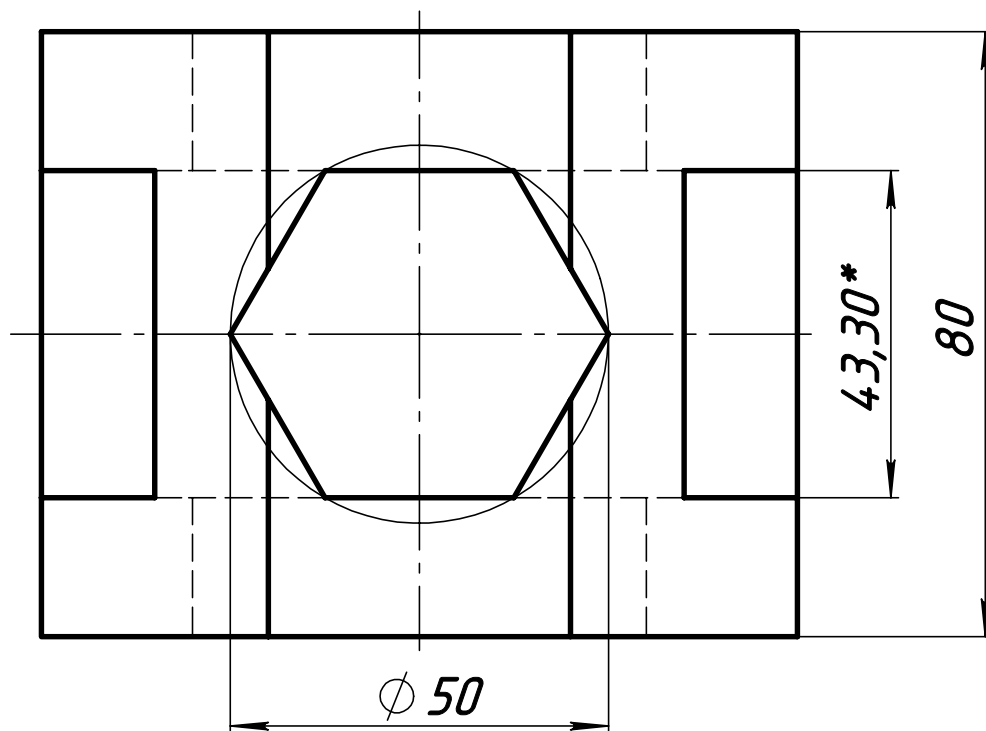
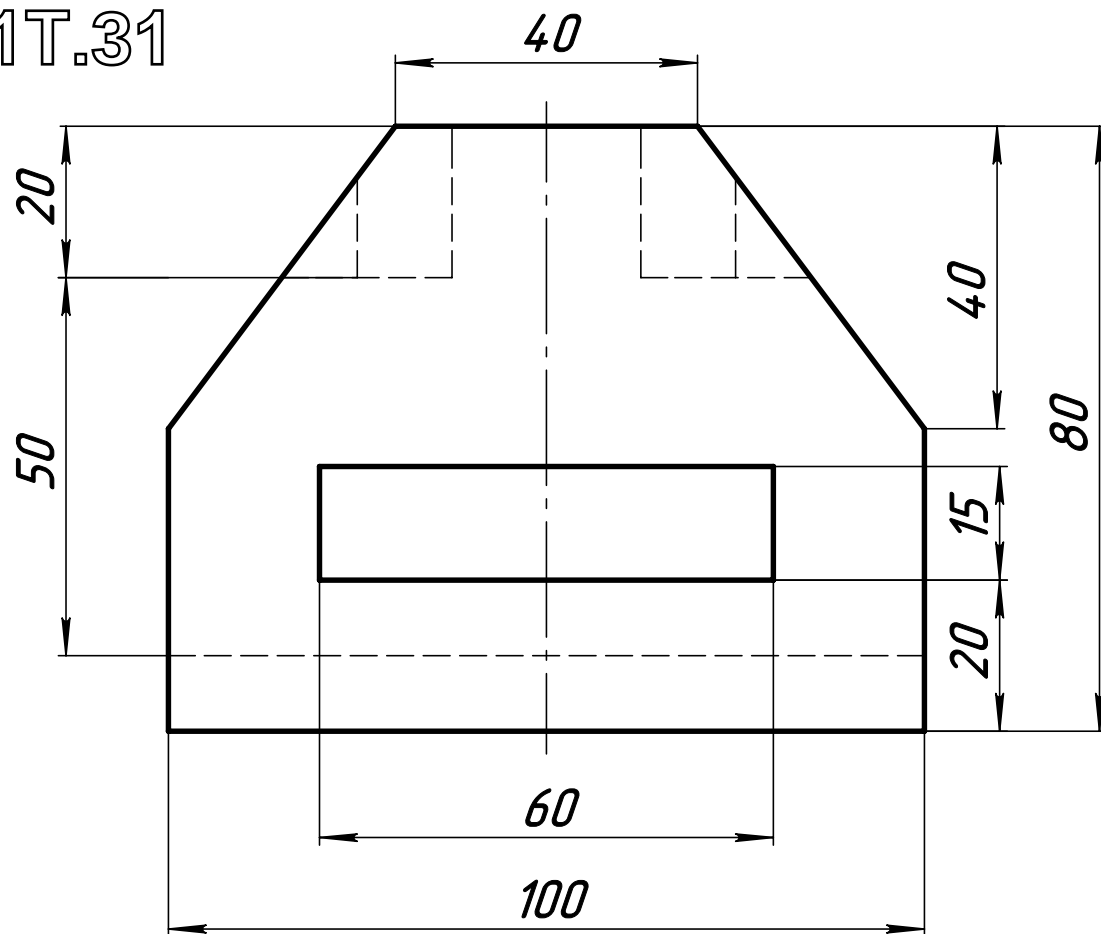


1T.30





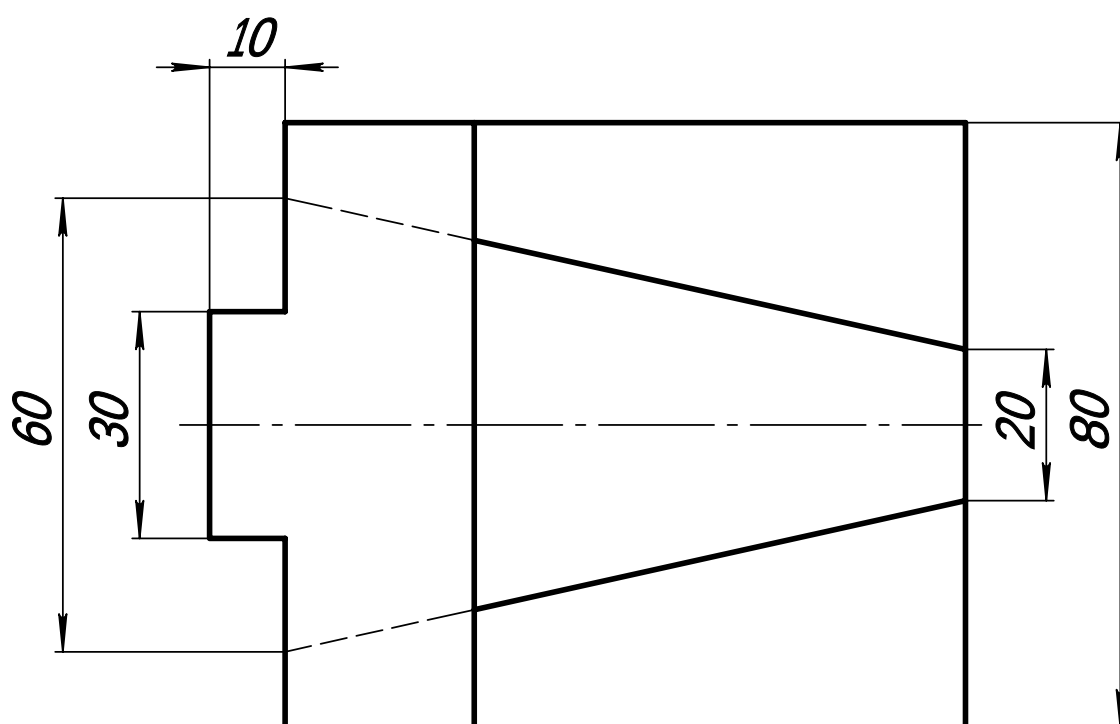
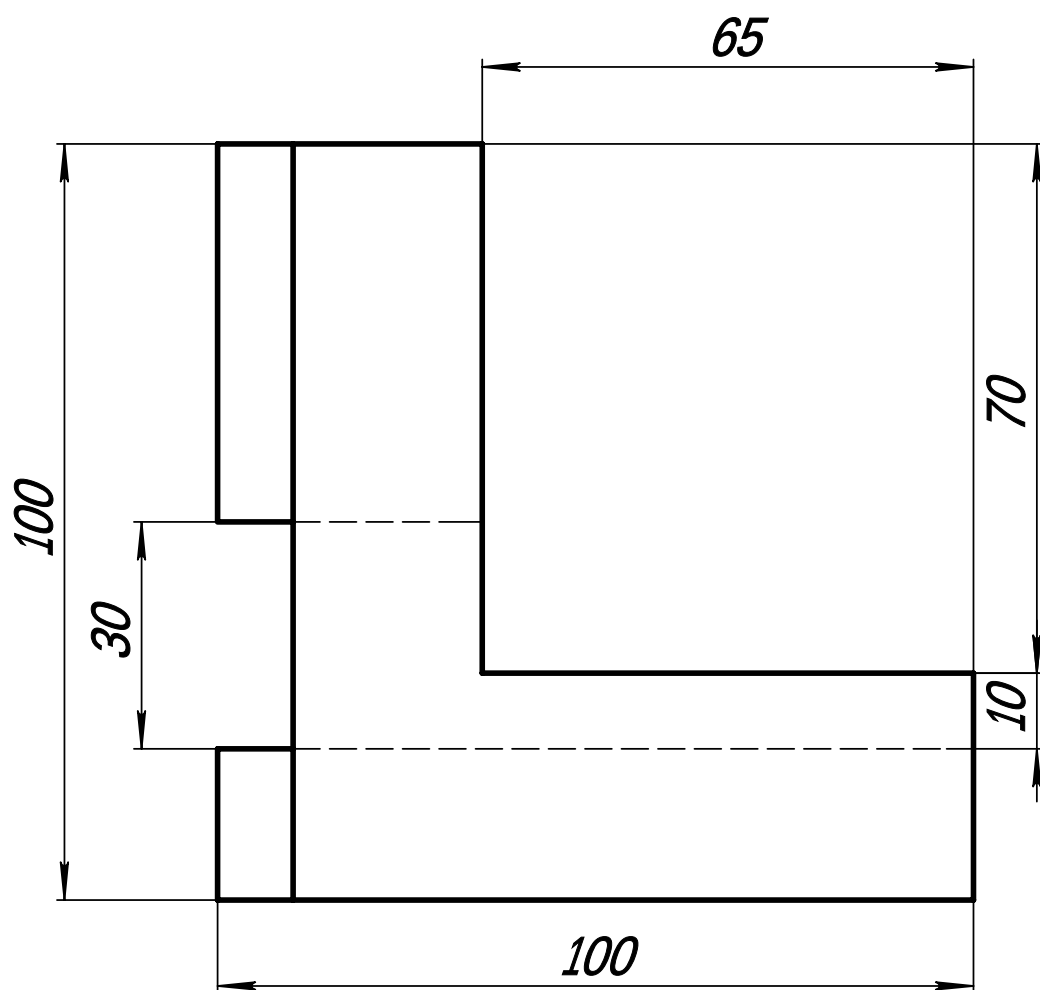
1Т.31



**Размер для справок*

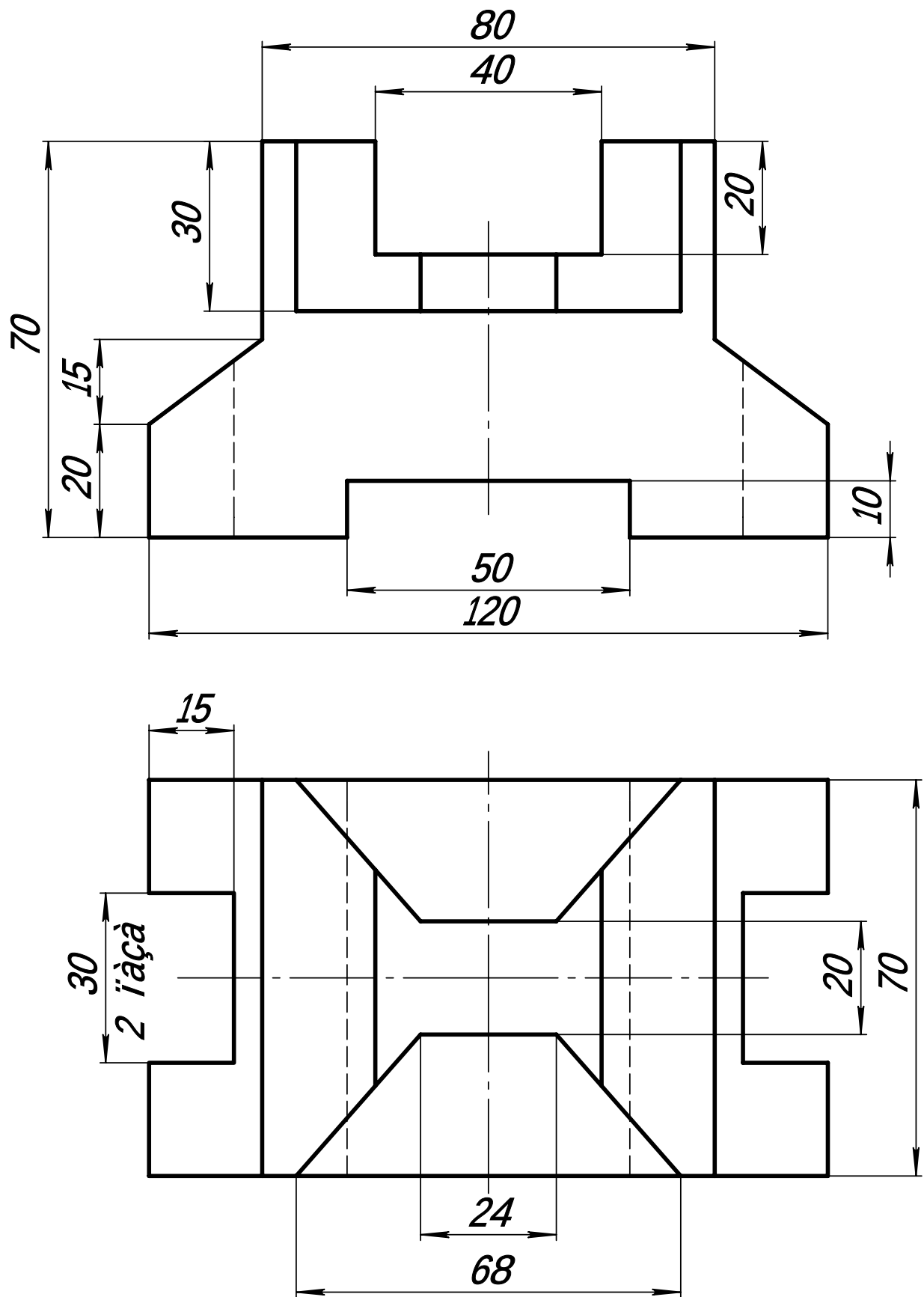


1T.32



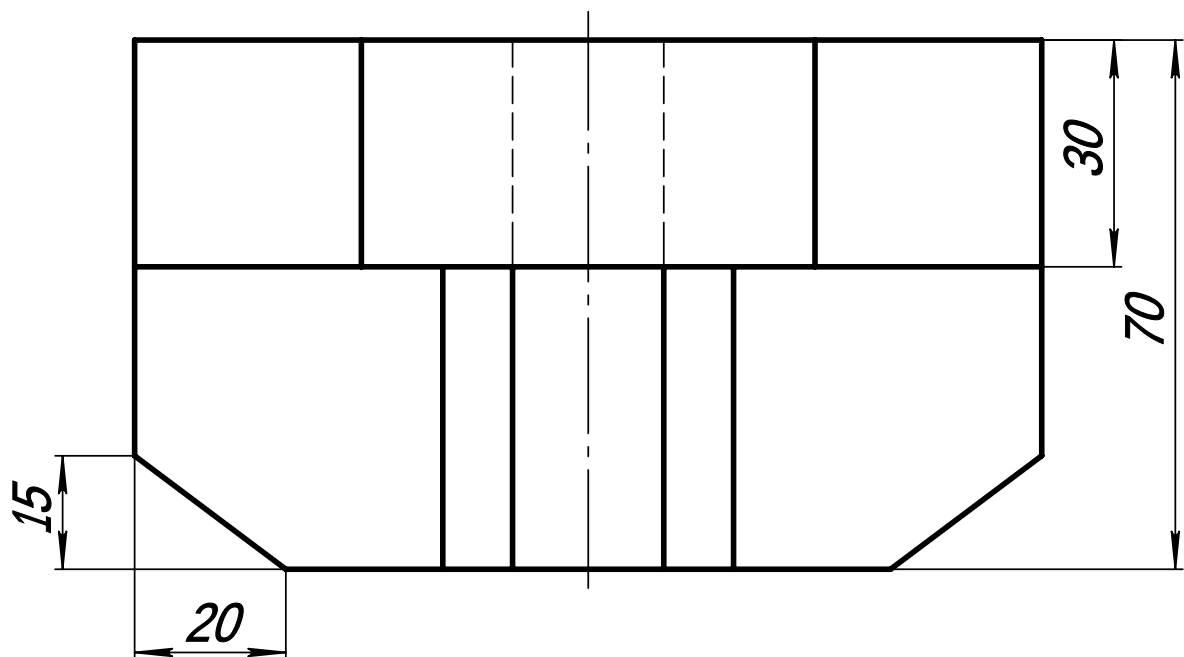
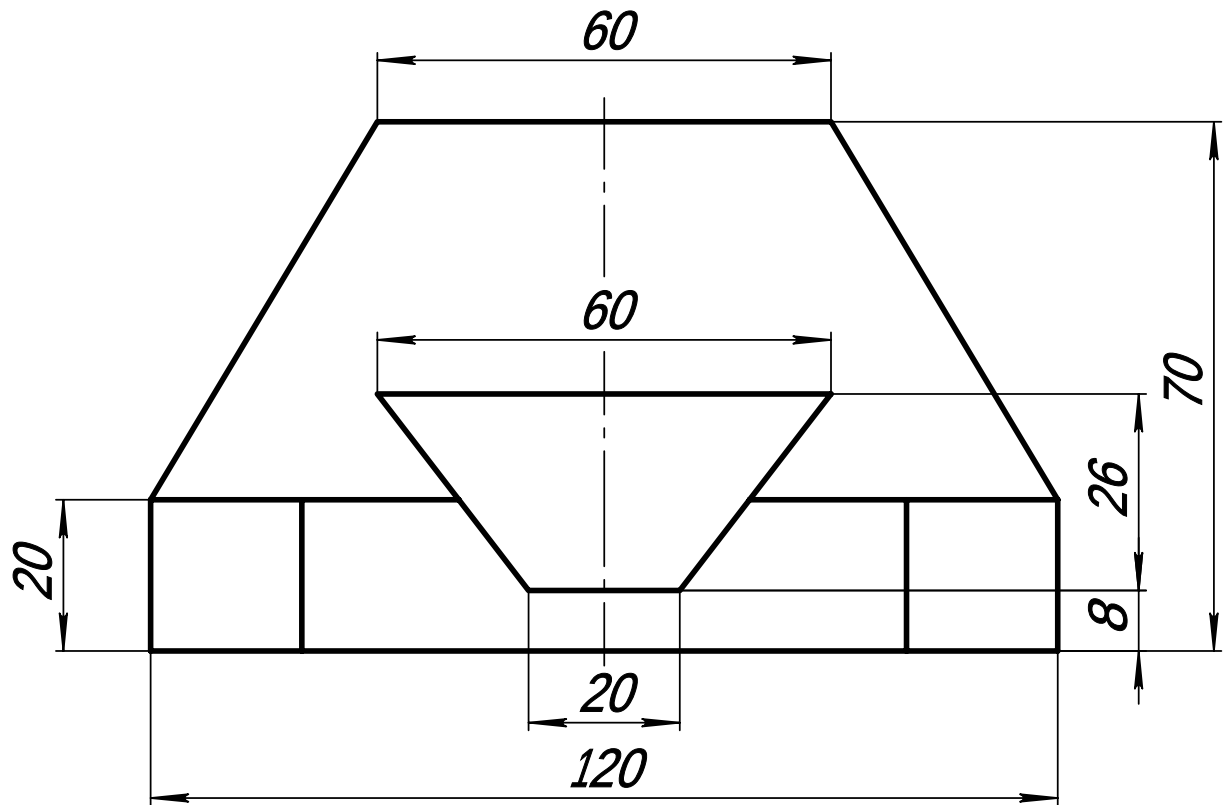


1T.33

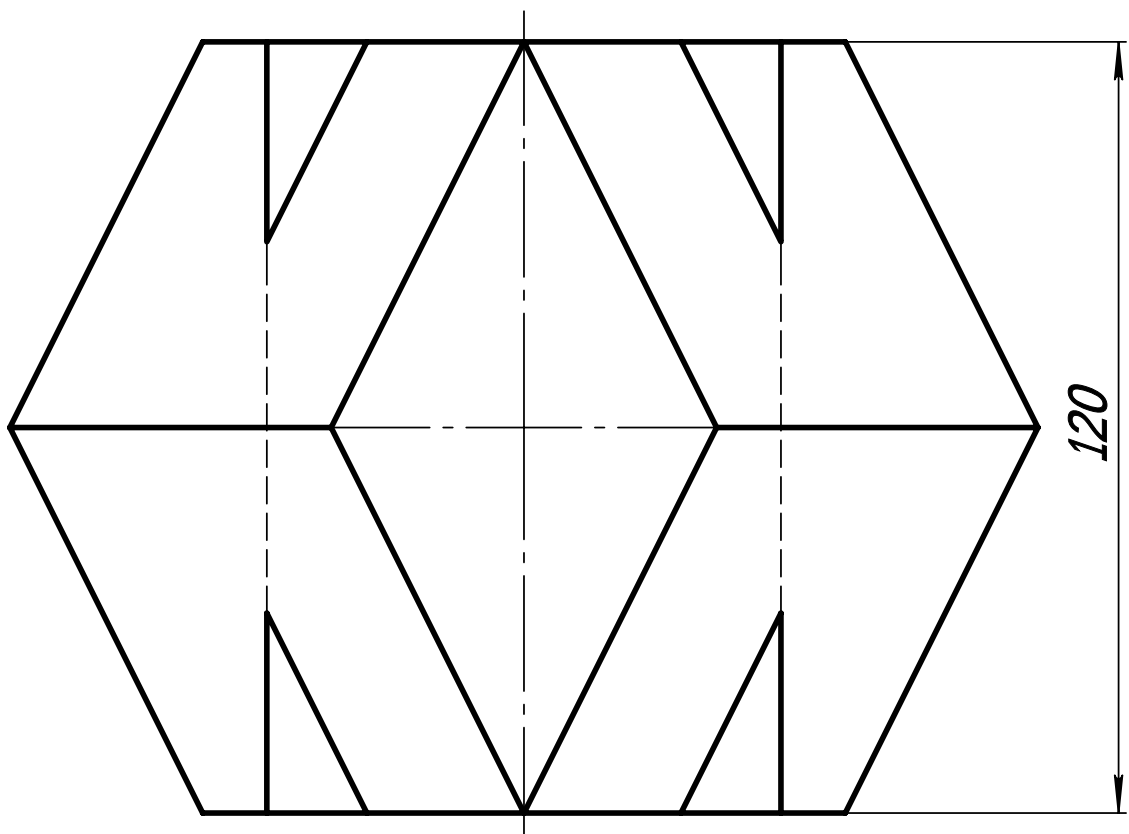
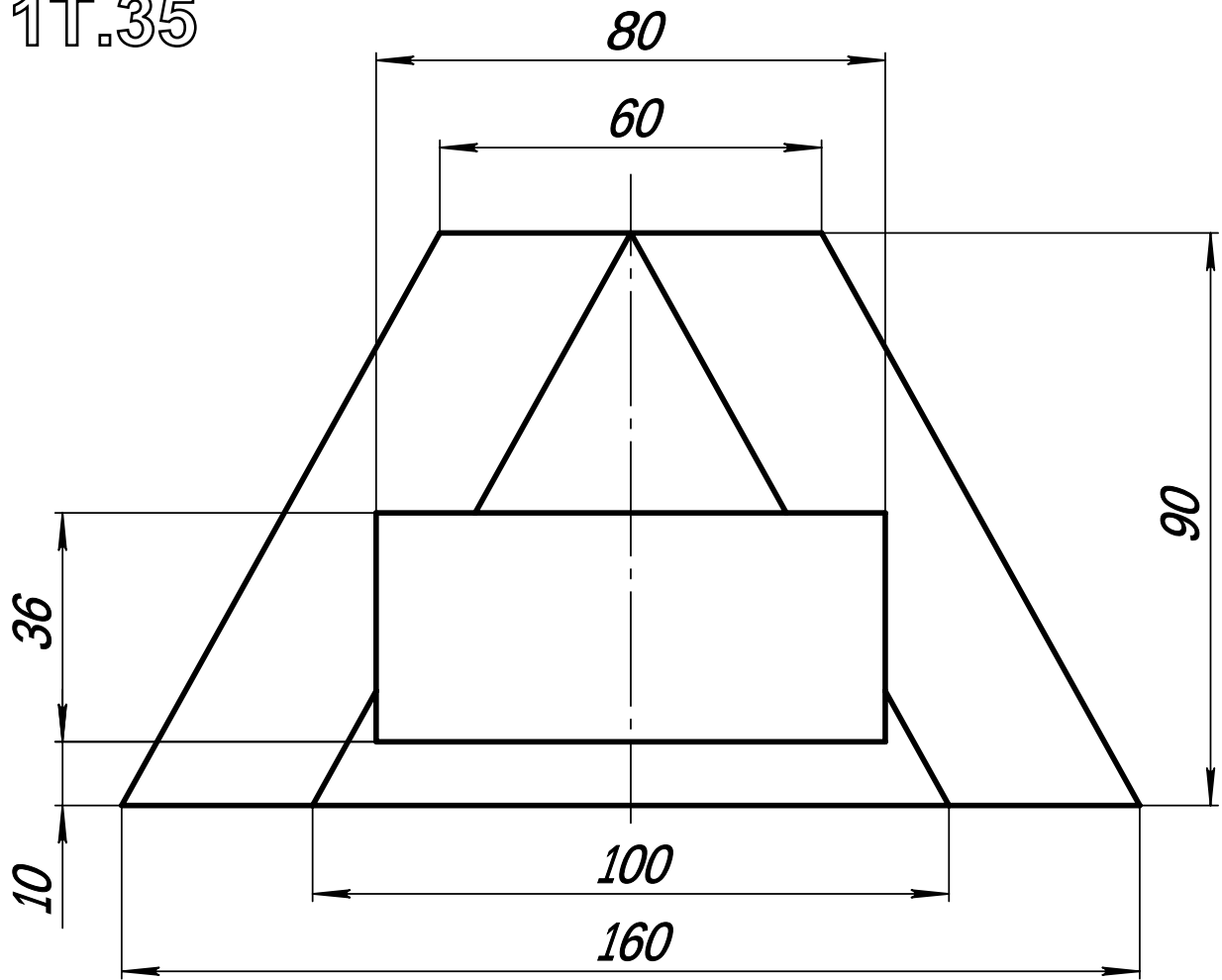




1T.34

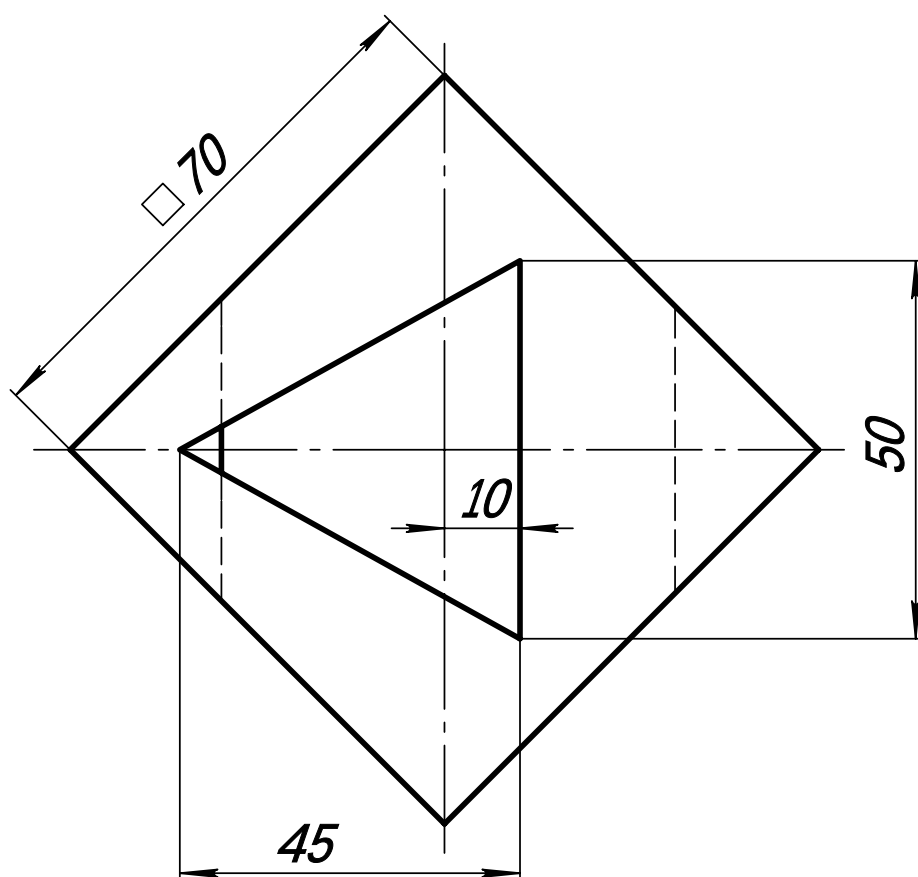
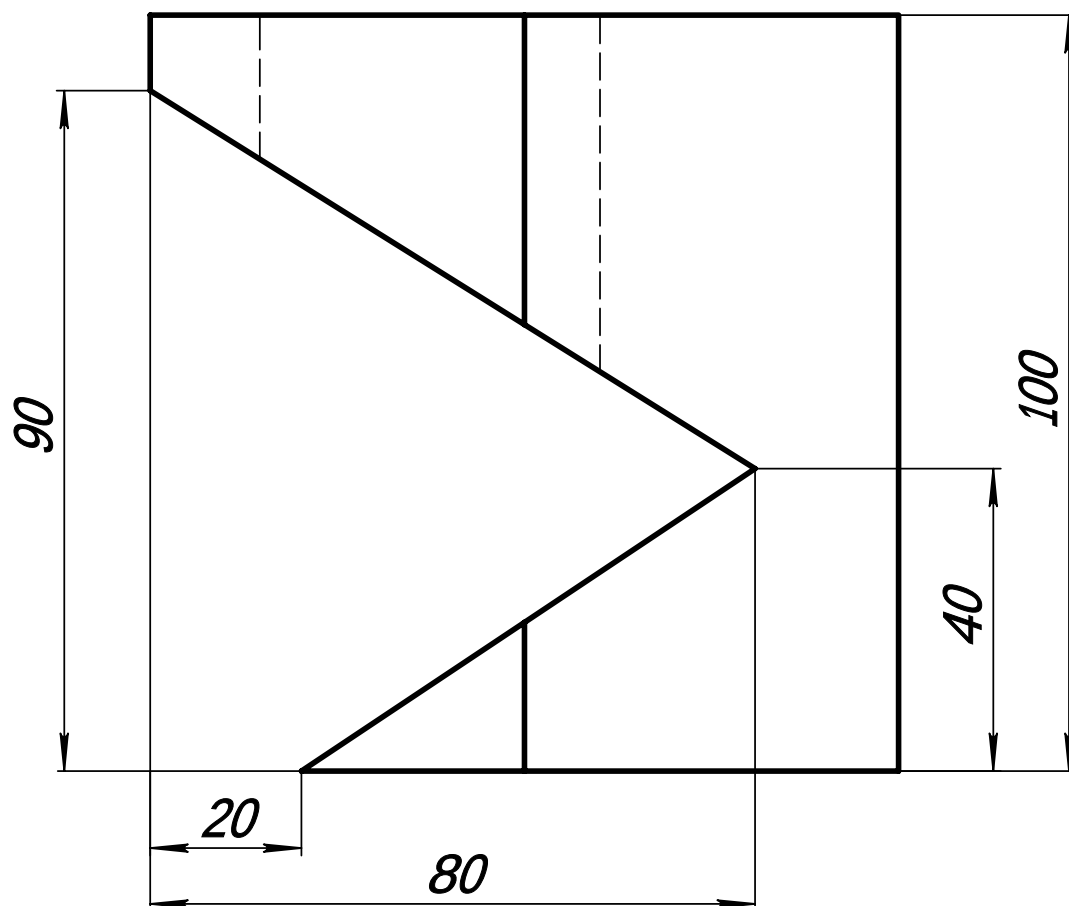


17.35



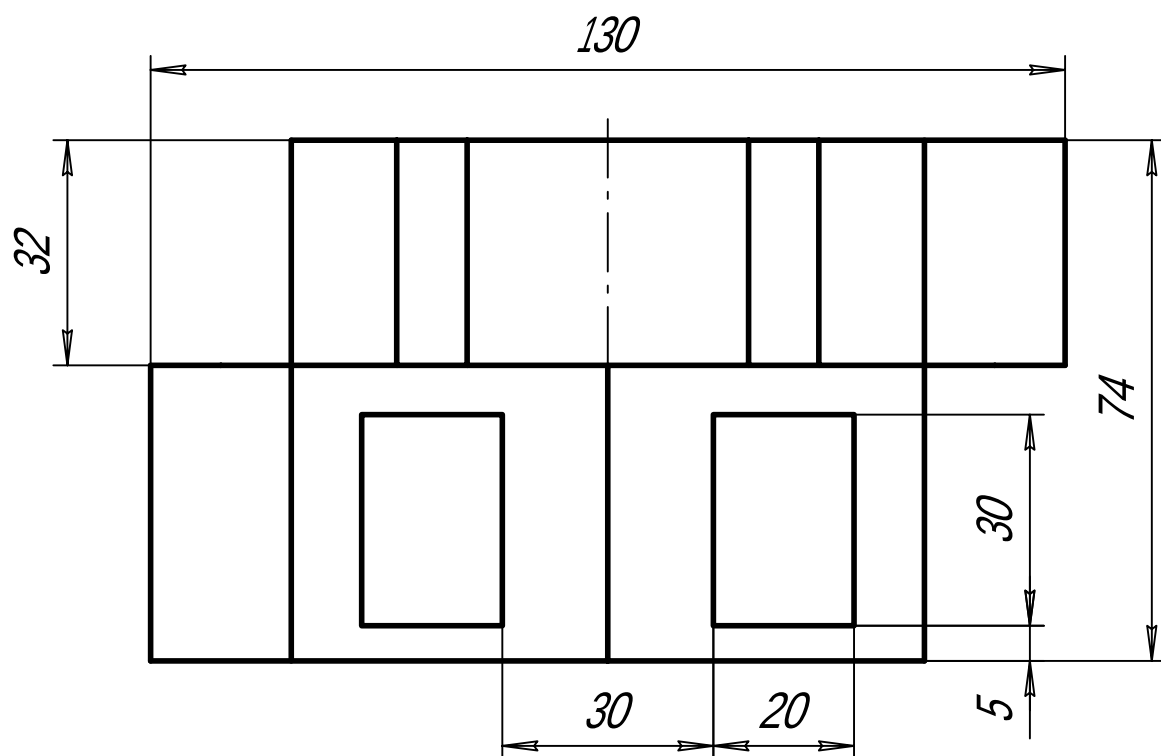
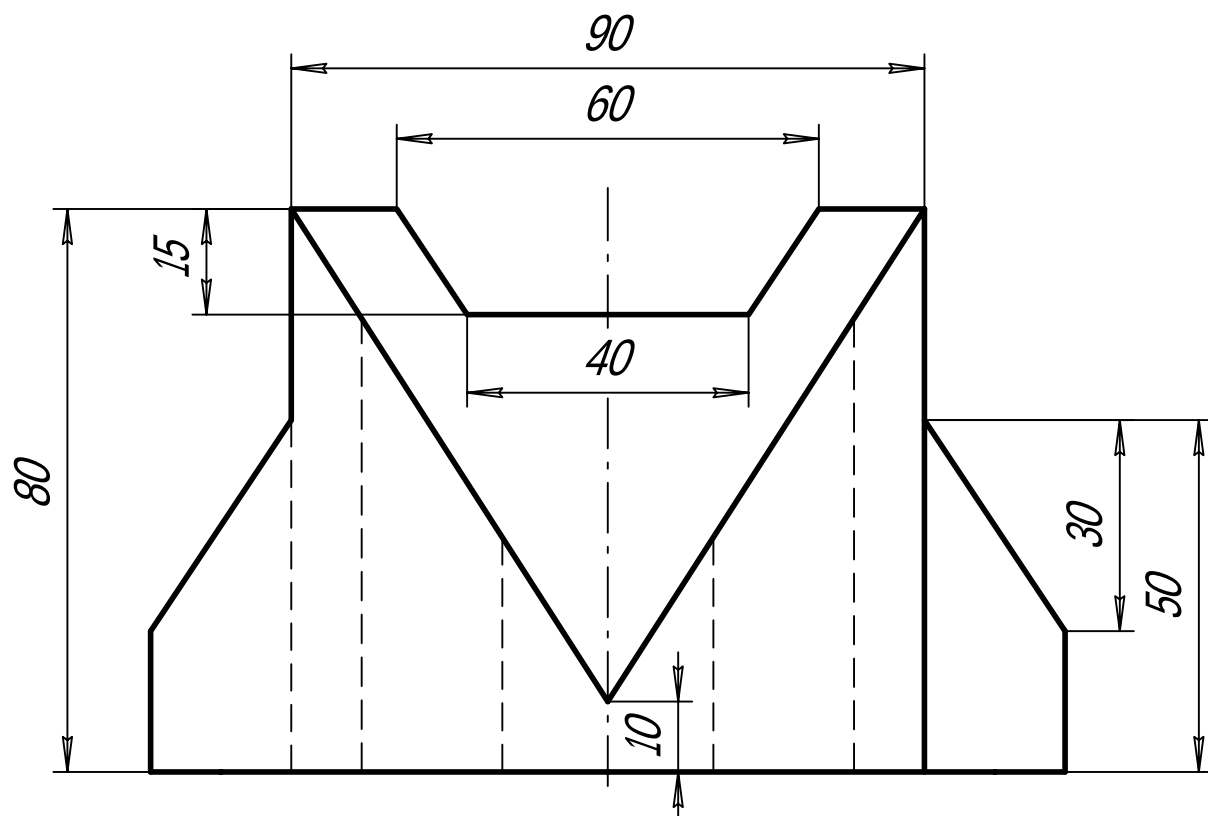


1T.36



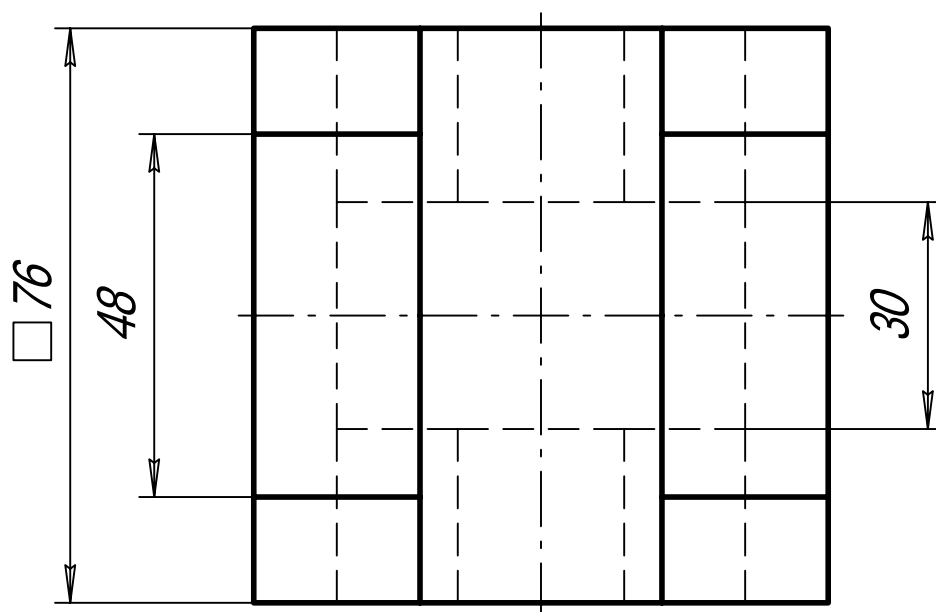
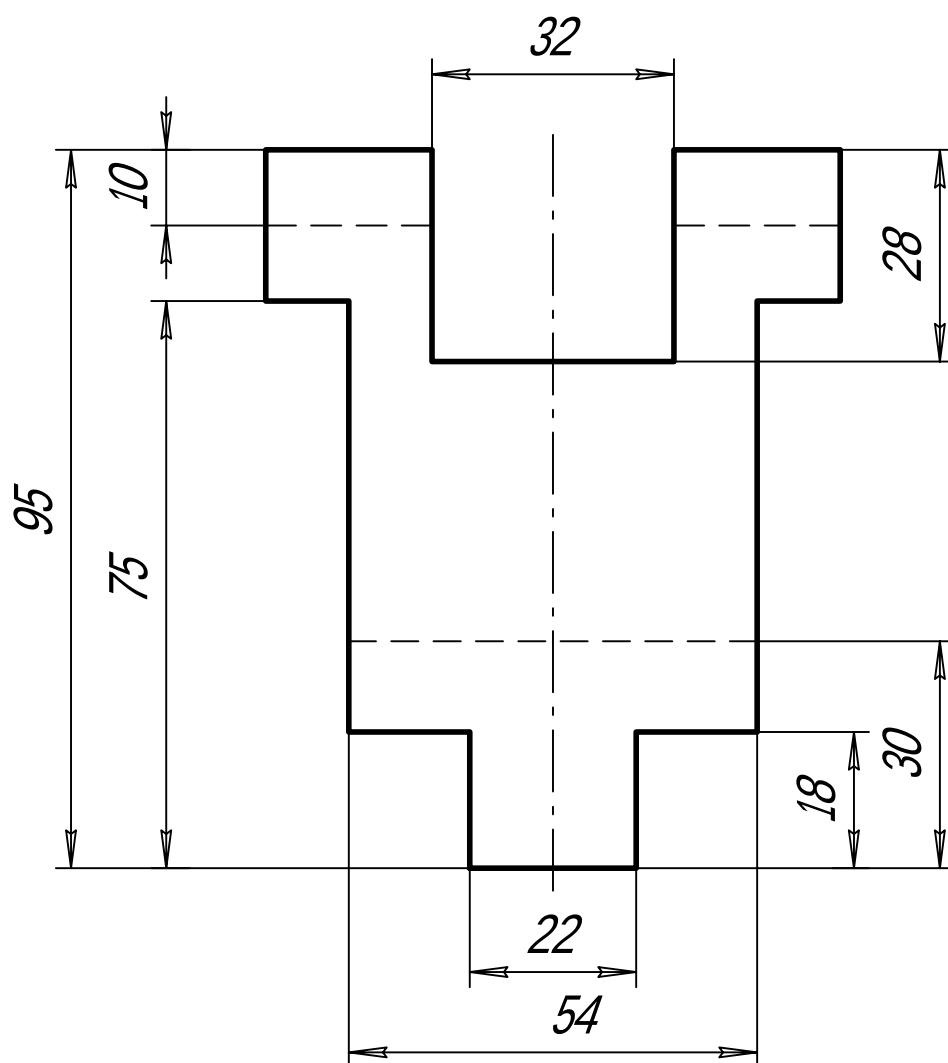


1T.37



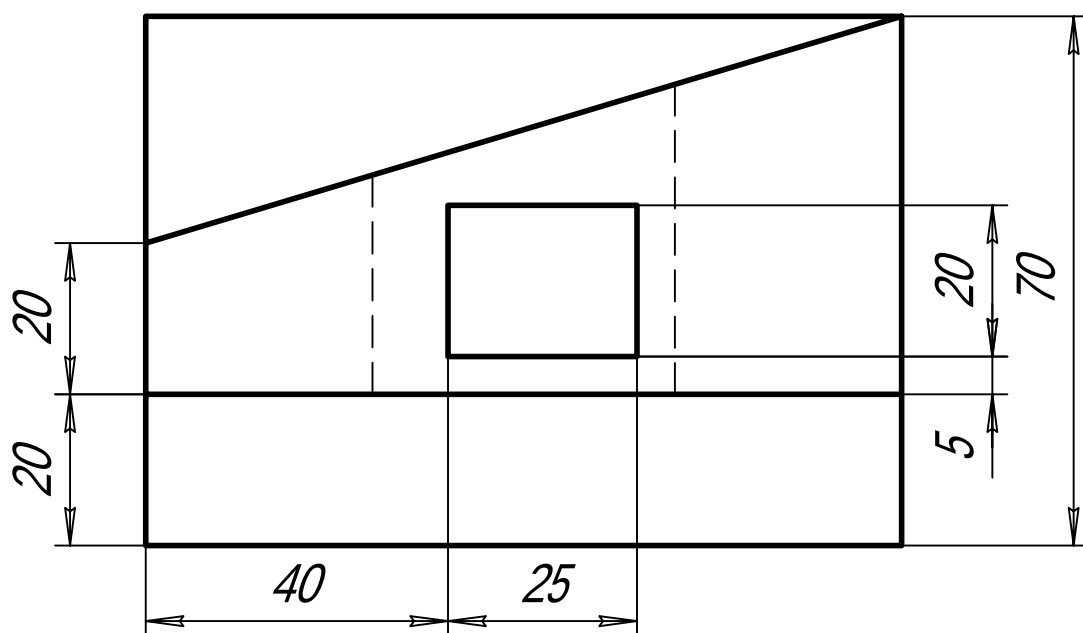
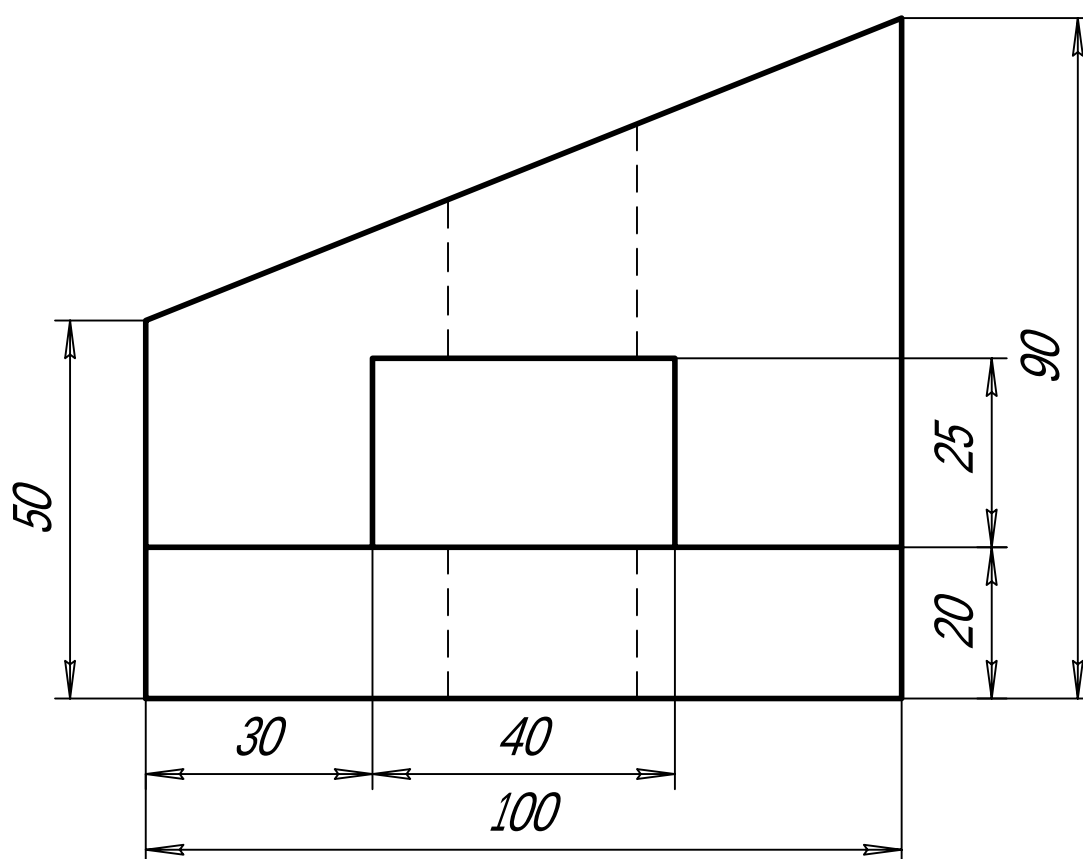


1T.38



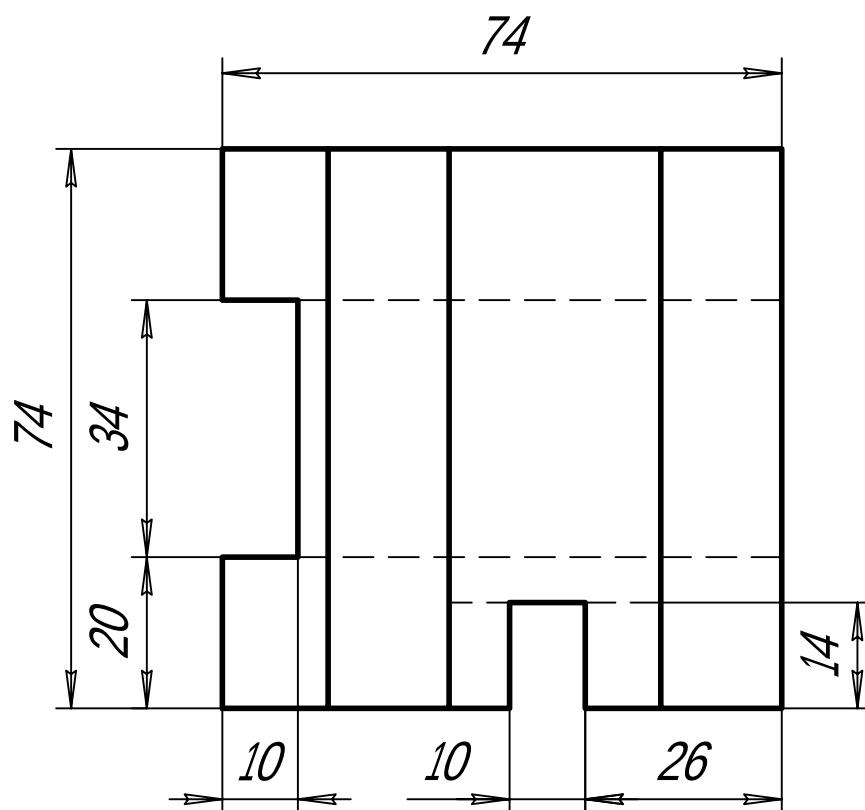
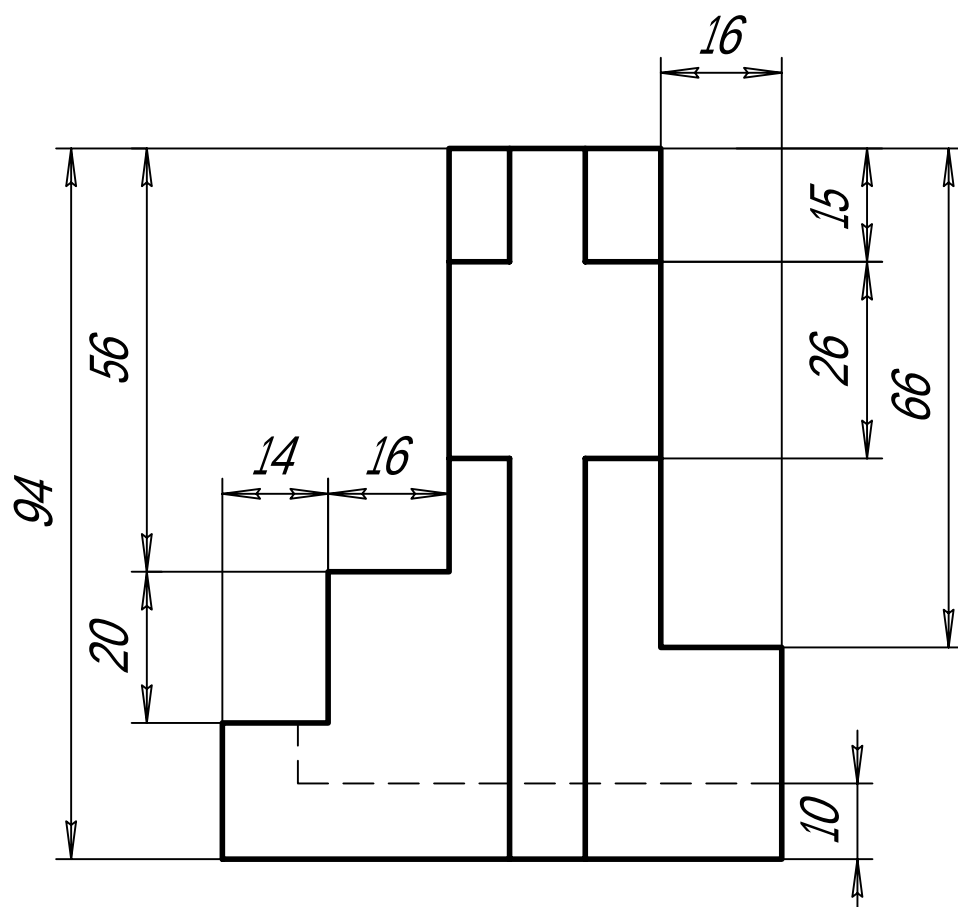


1T.39



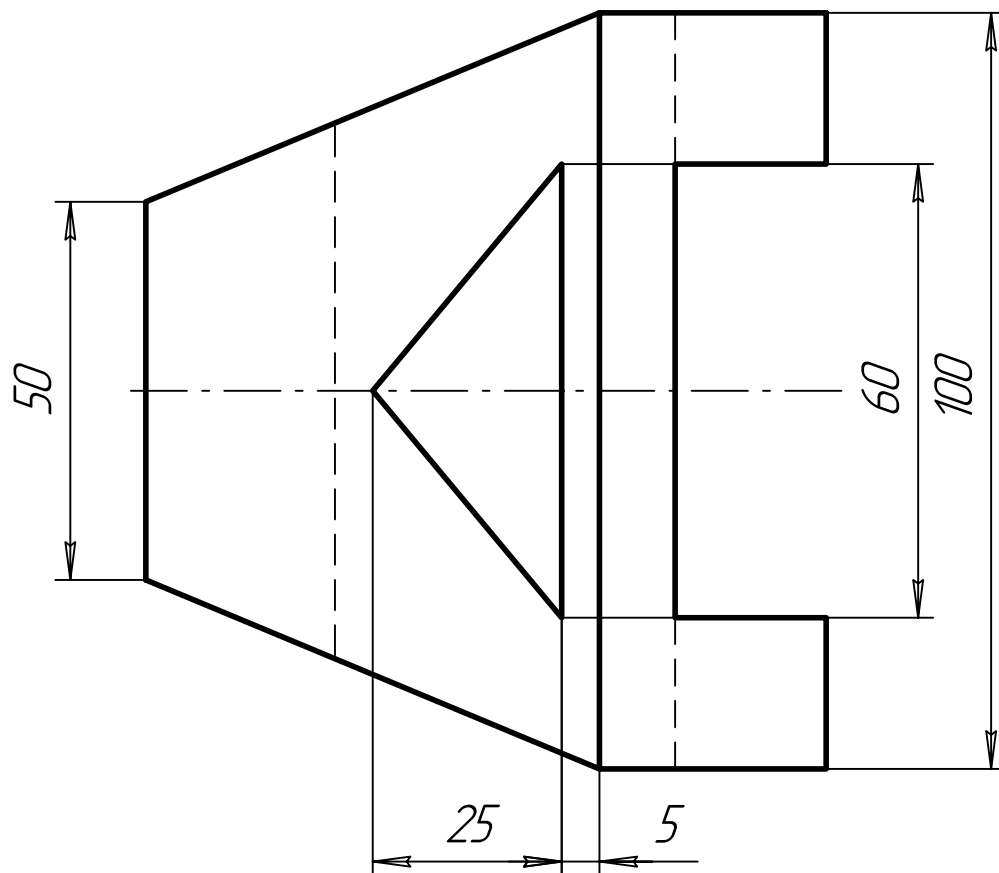
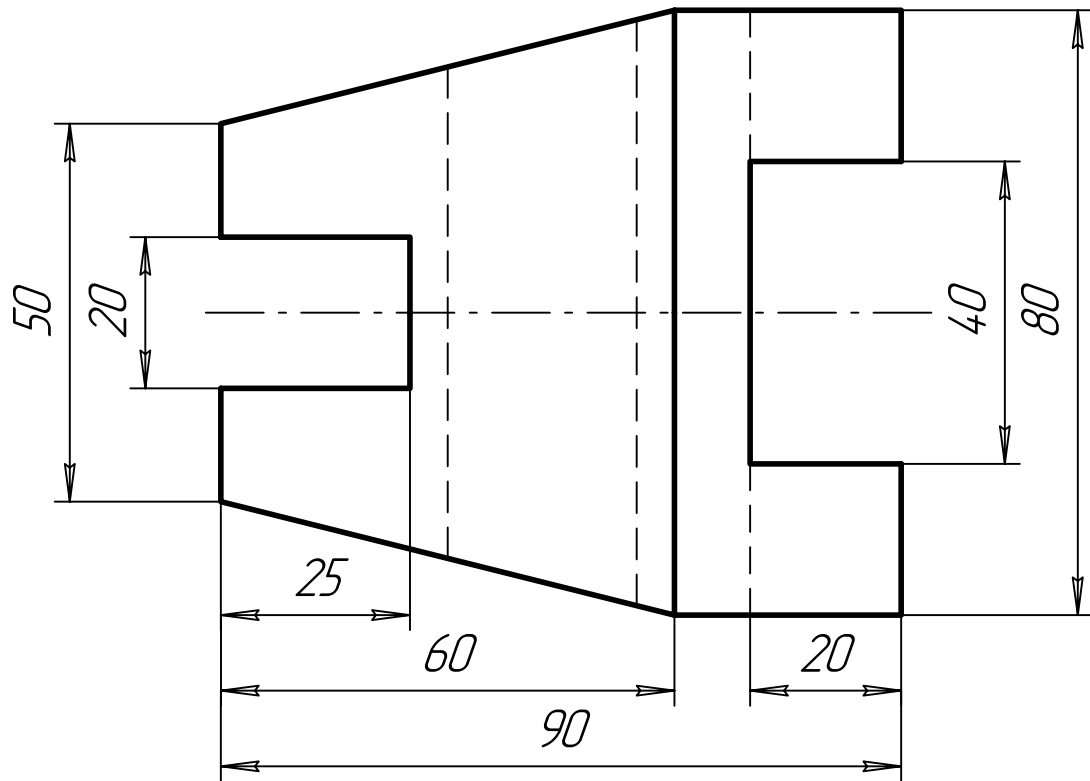


1T.40



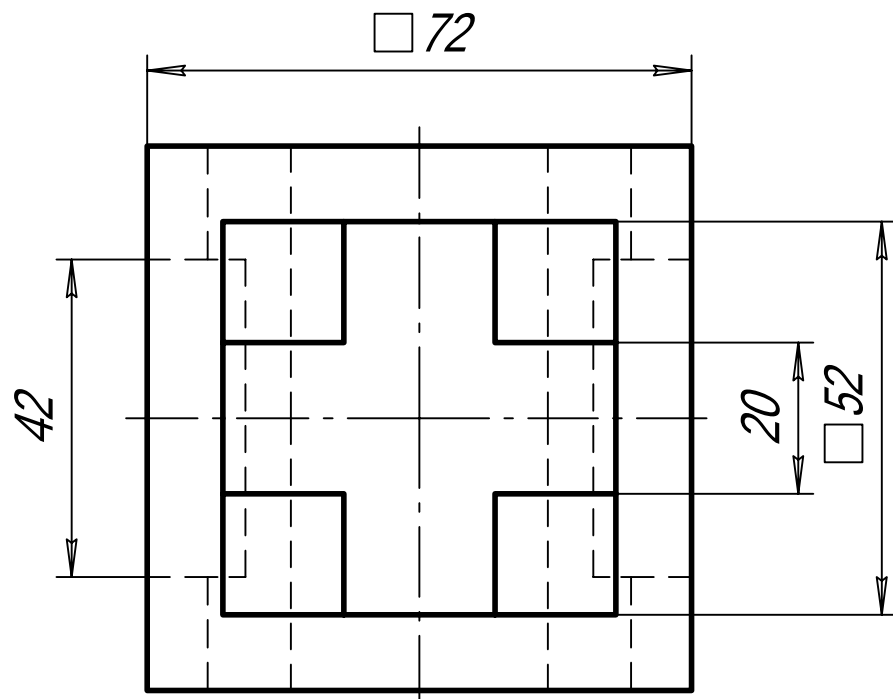
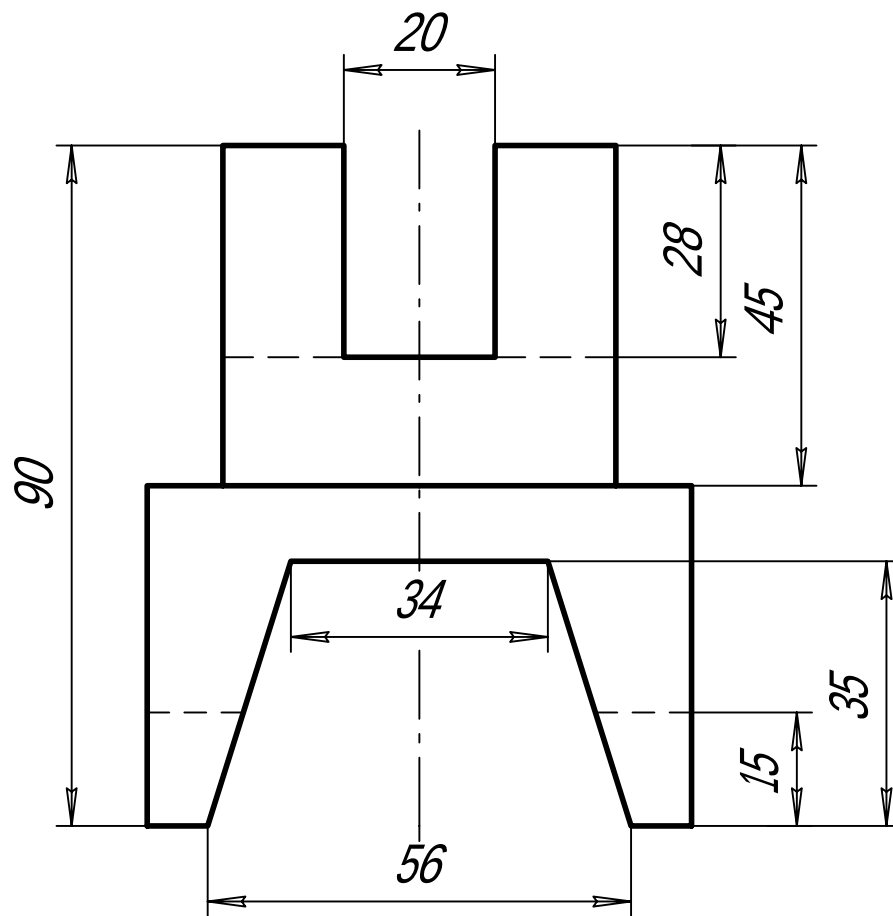


1T.41



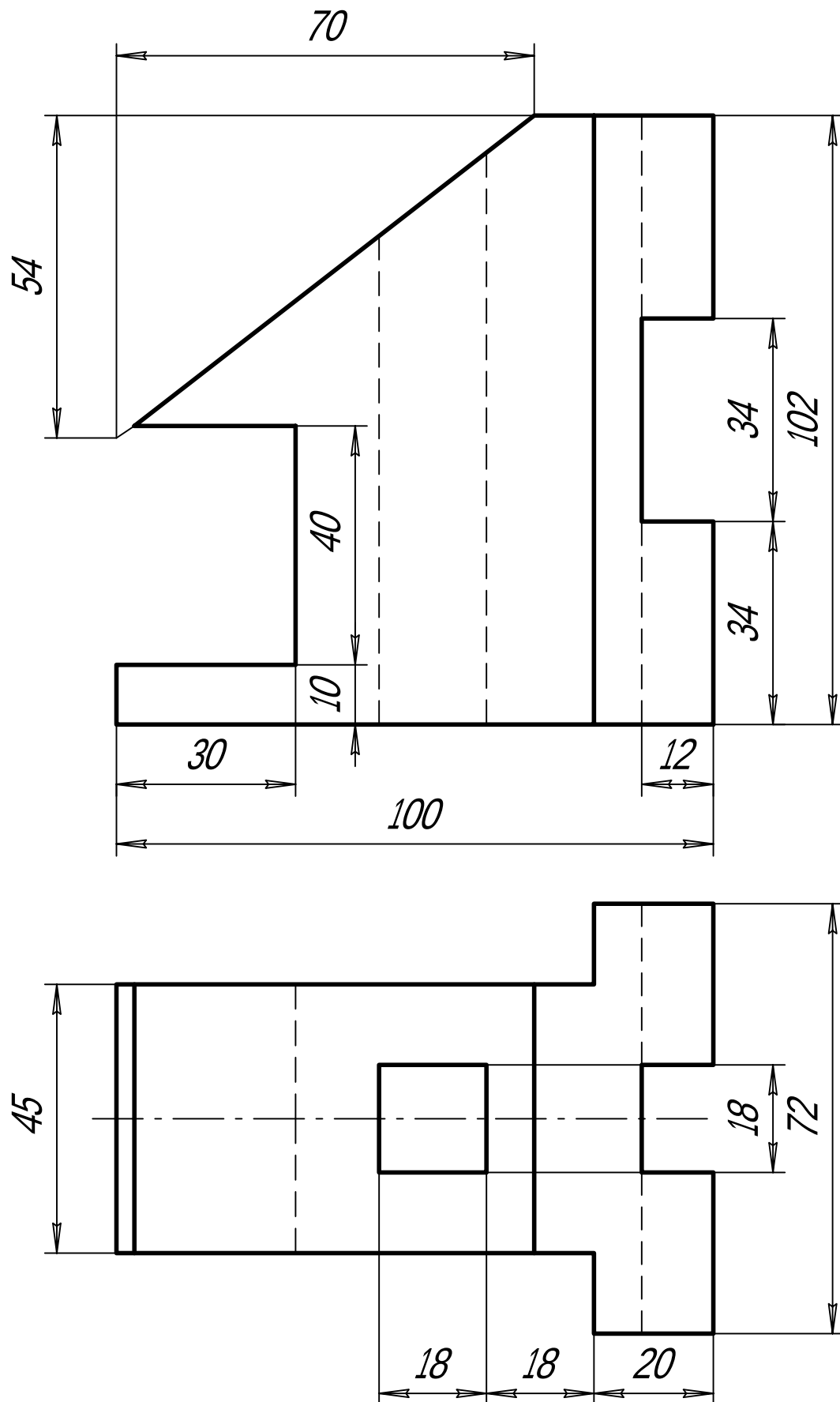


1T.42



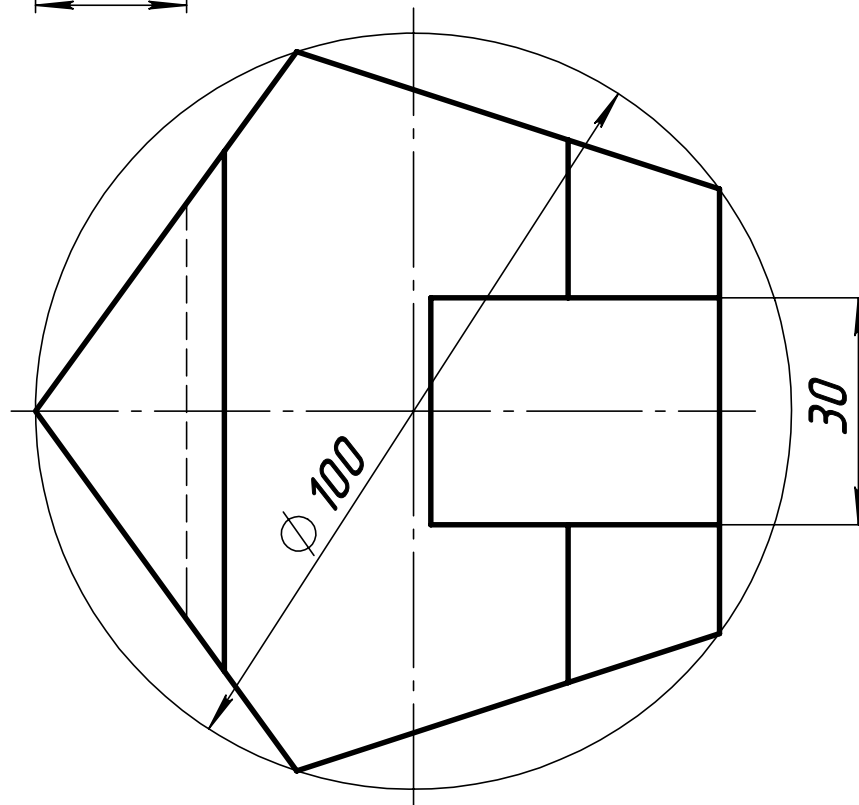
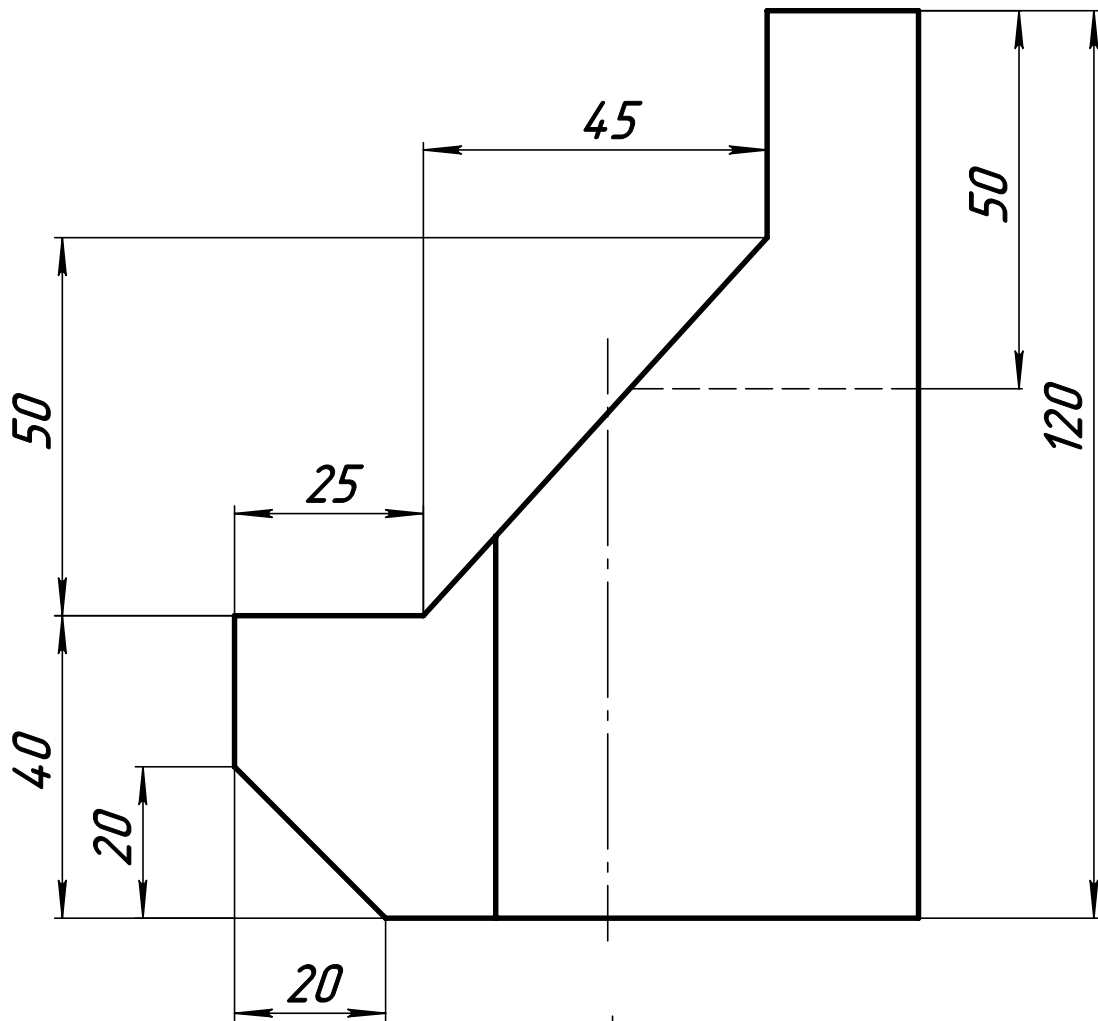


1T.43



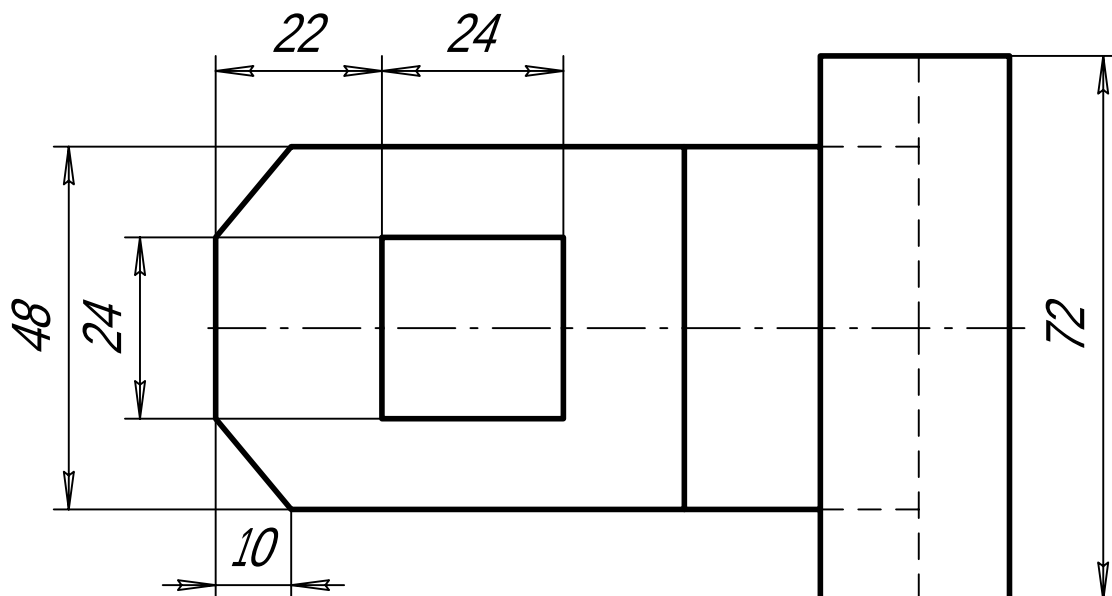
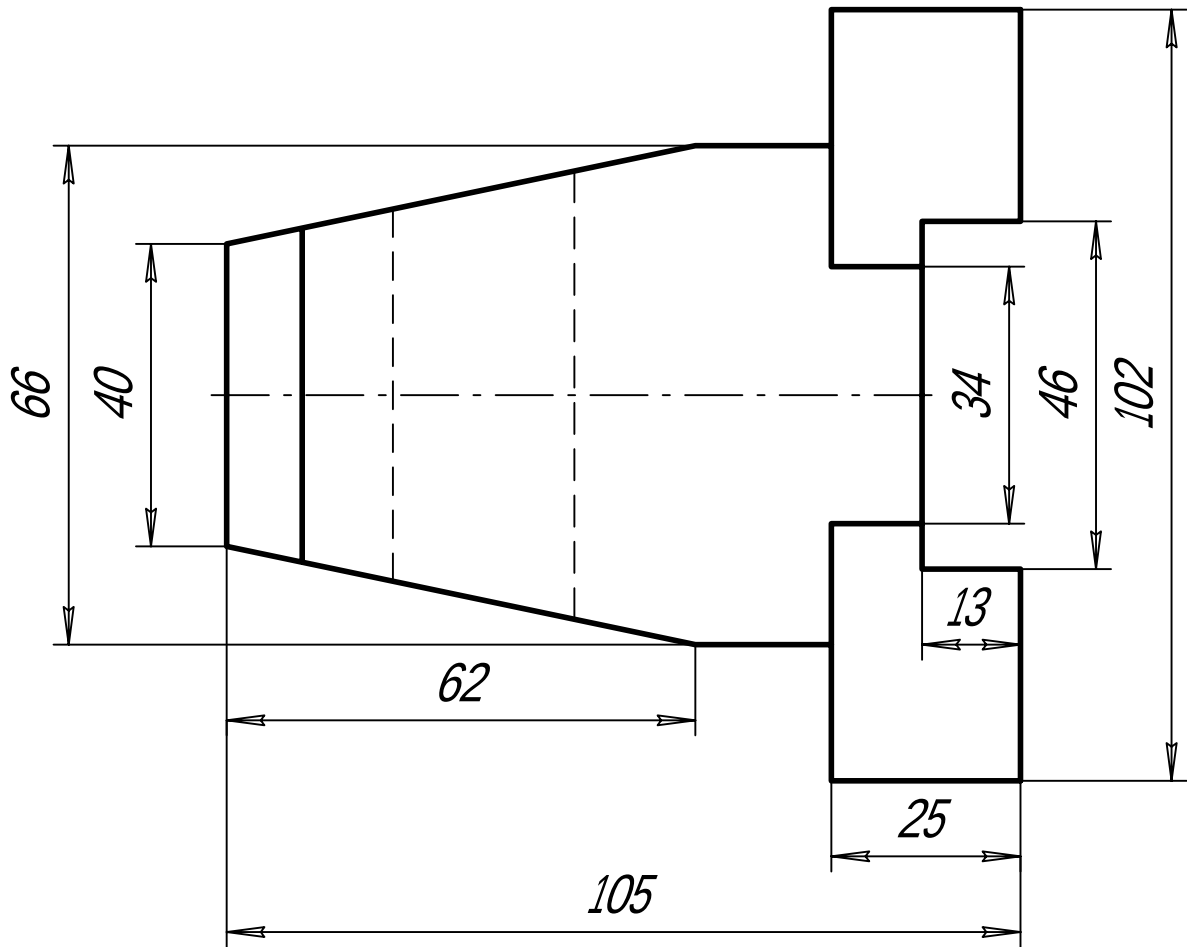


1T.44



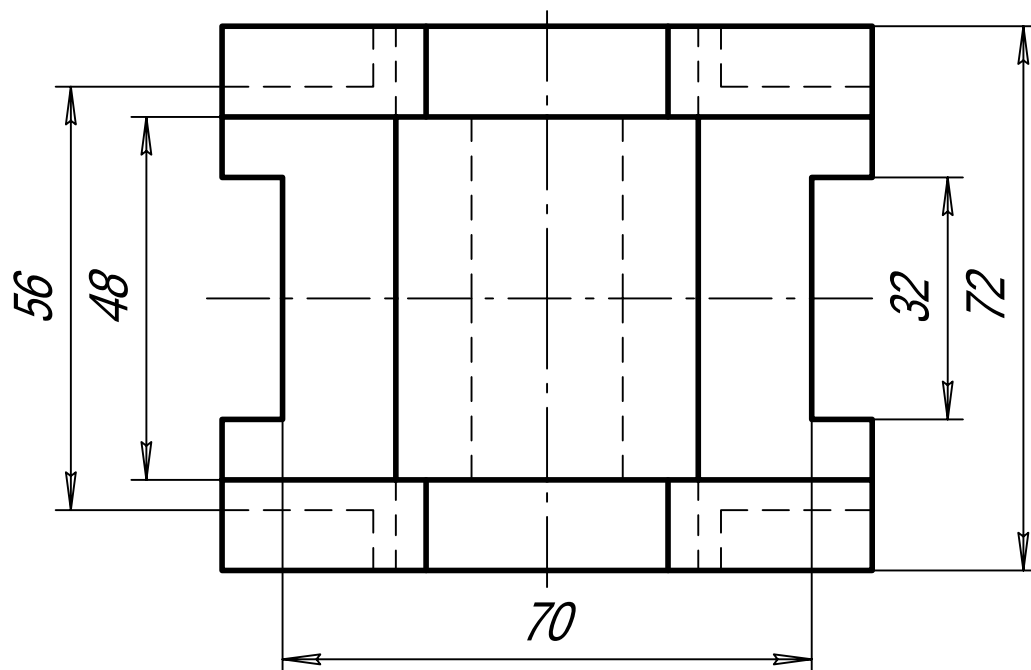
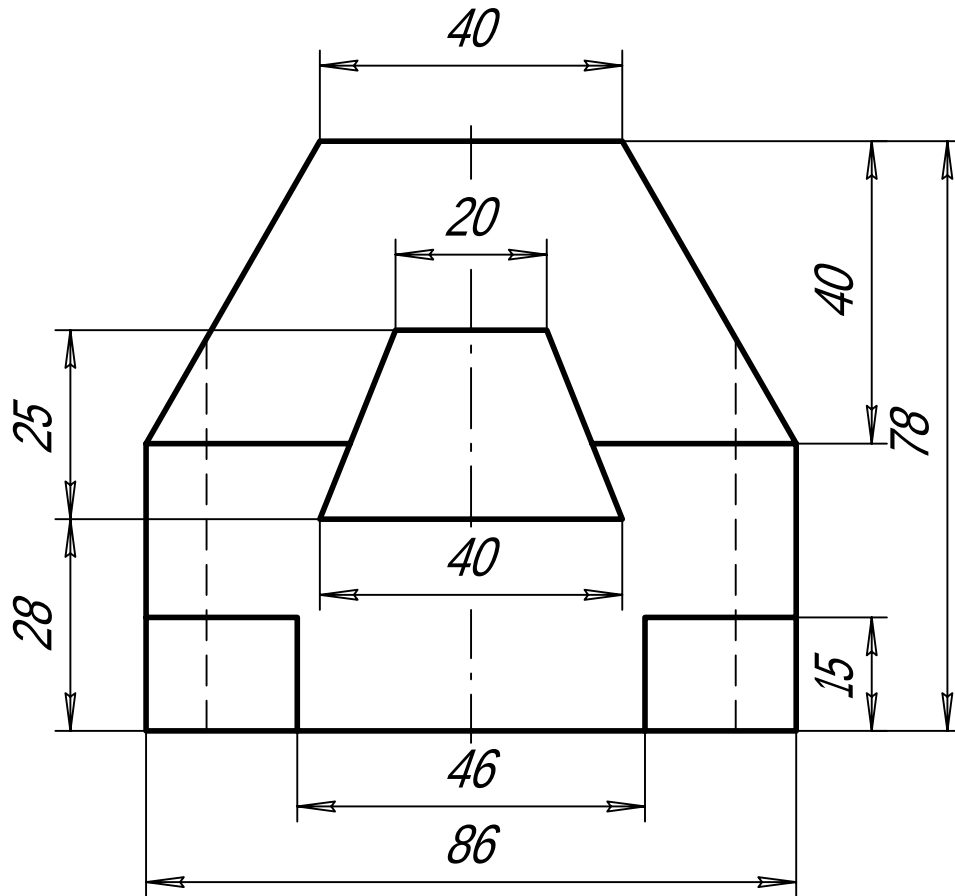


1T.45



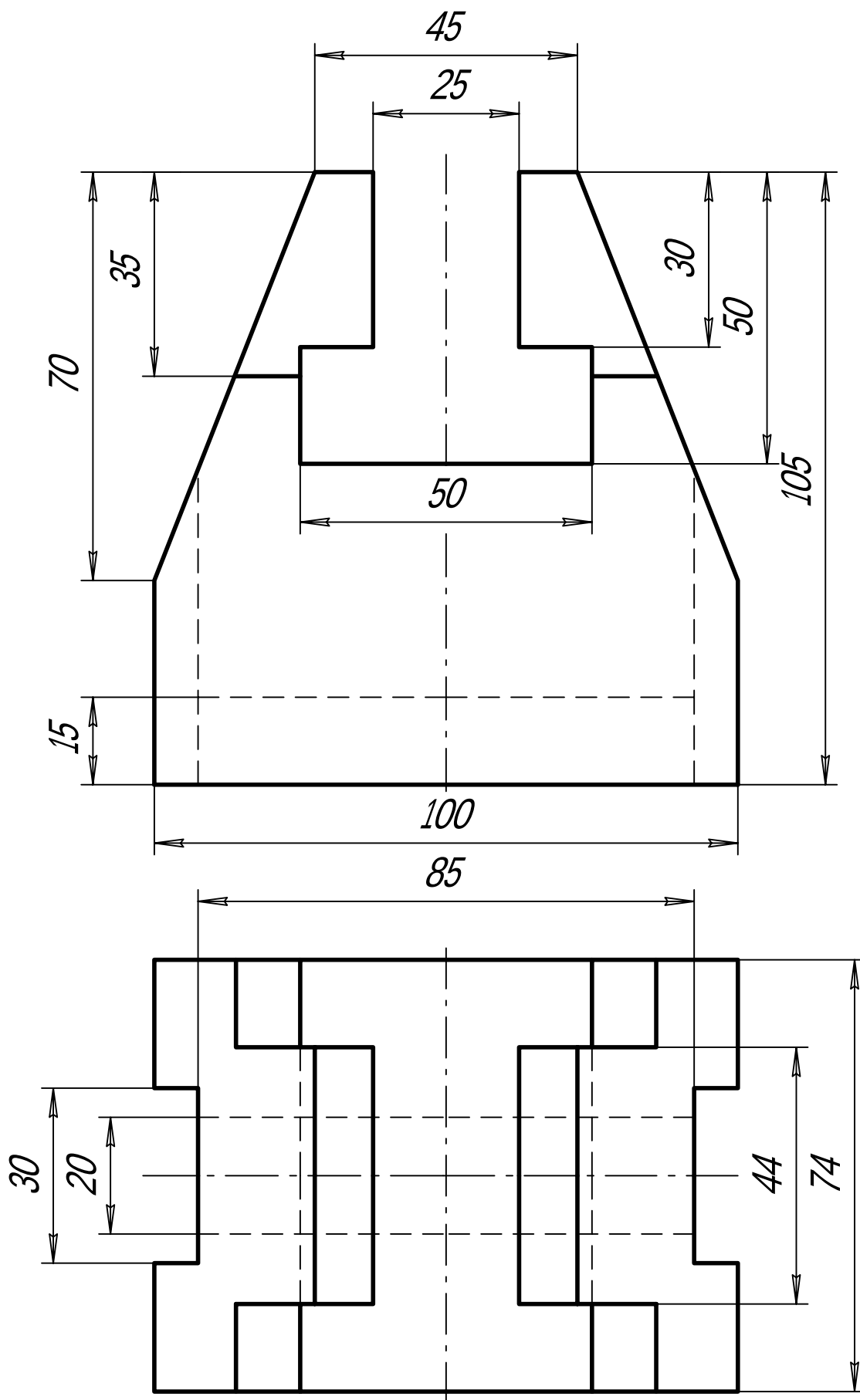


1T.46



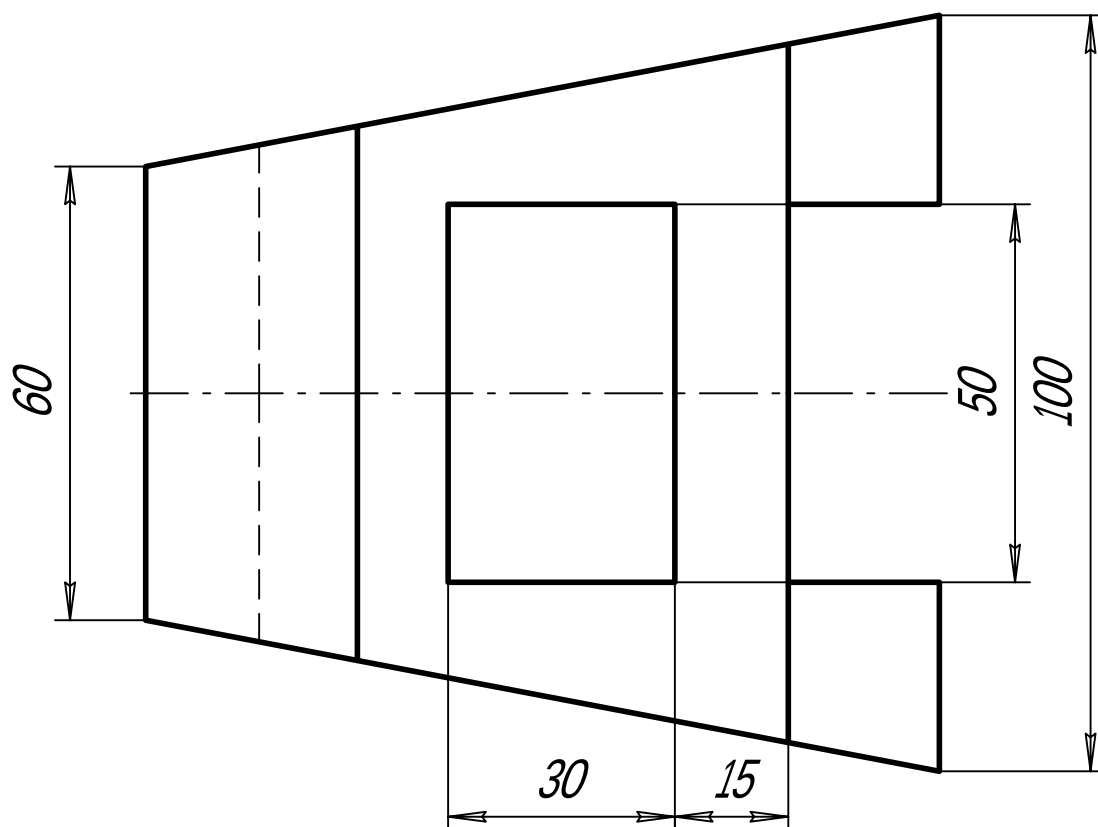
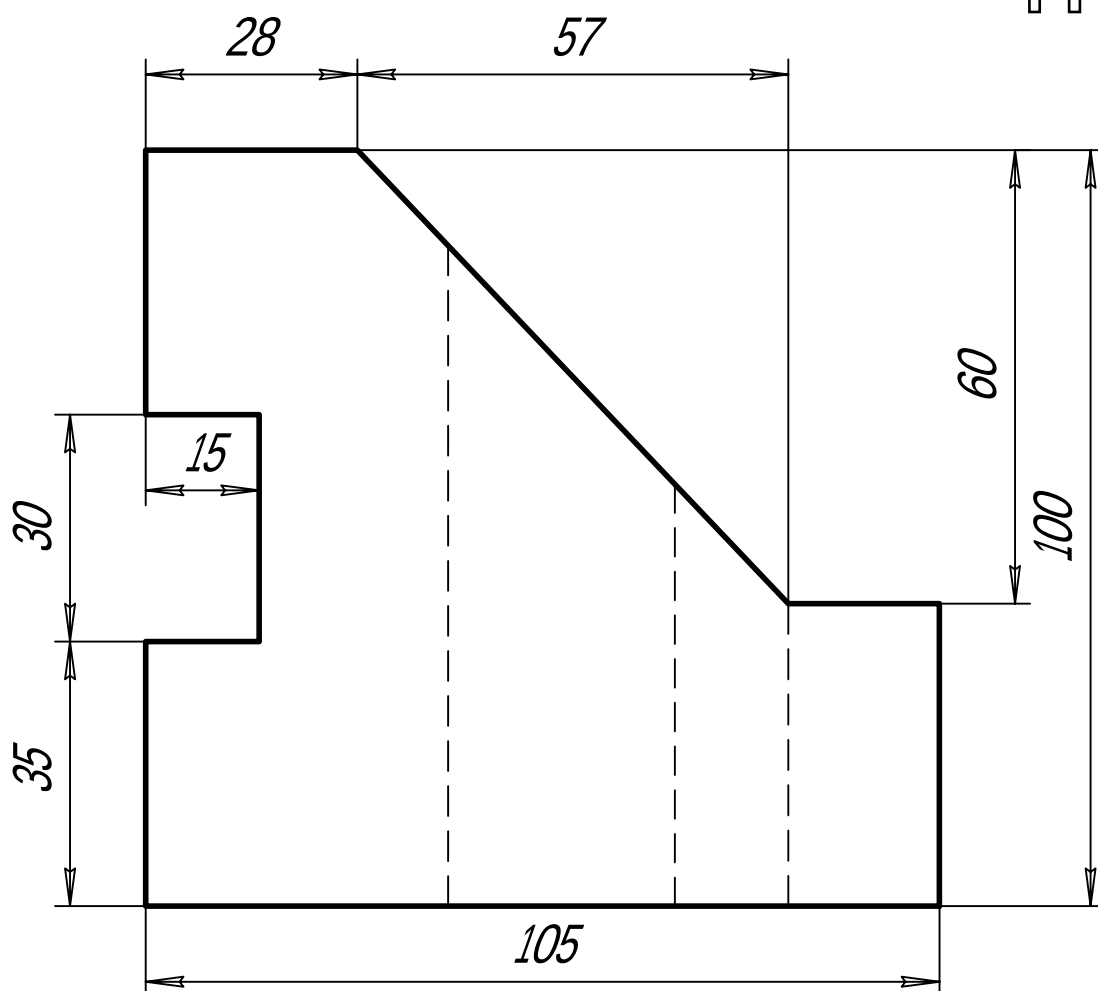


1T.47



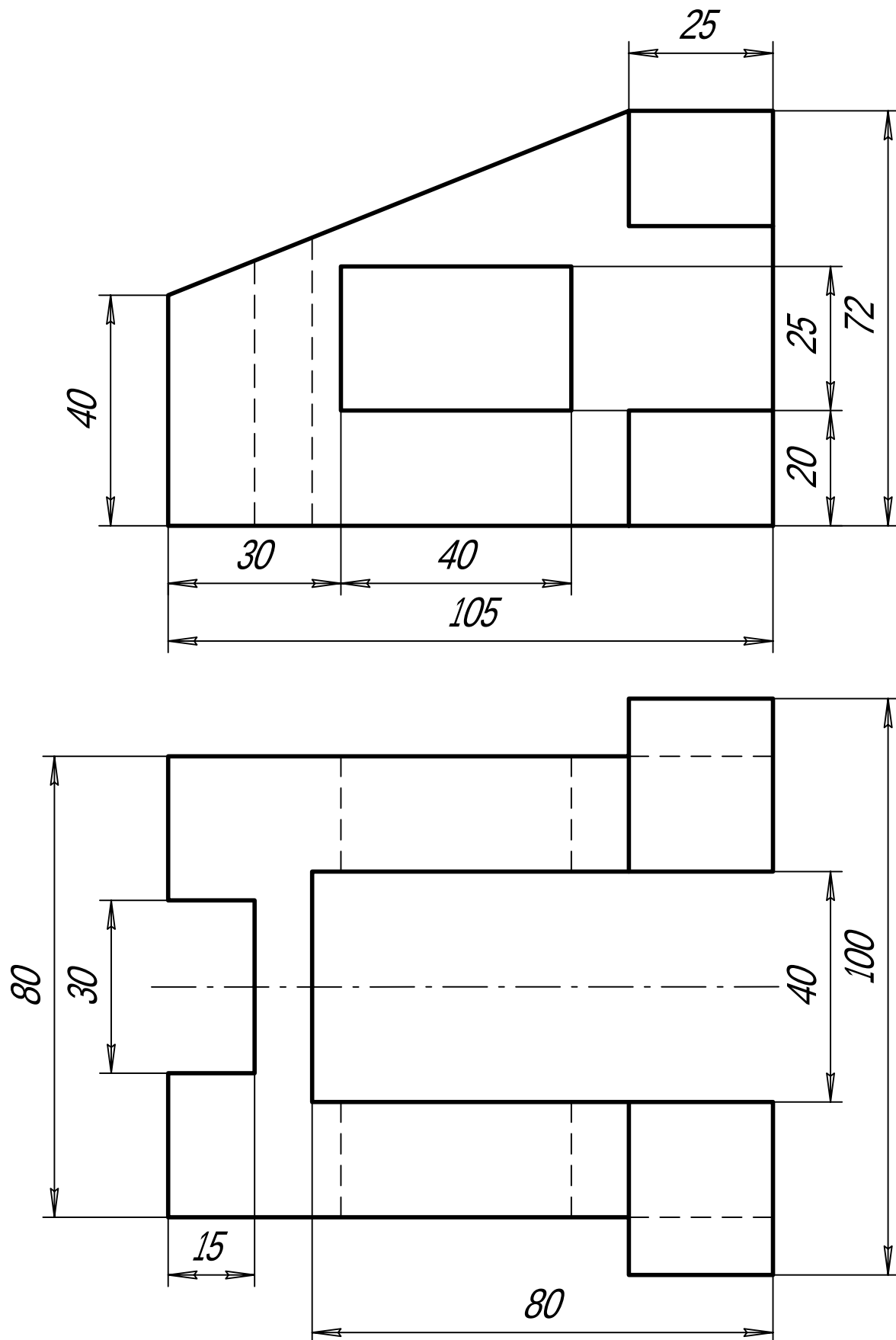


1T.48



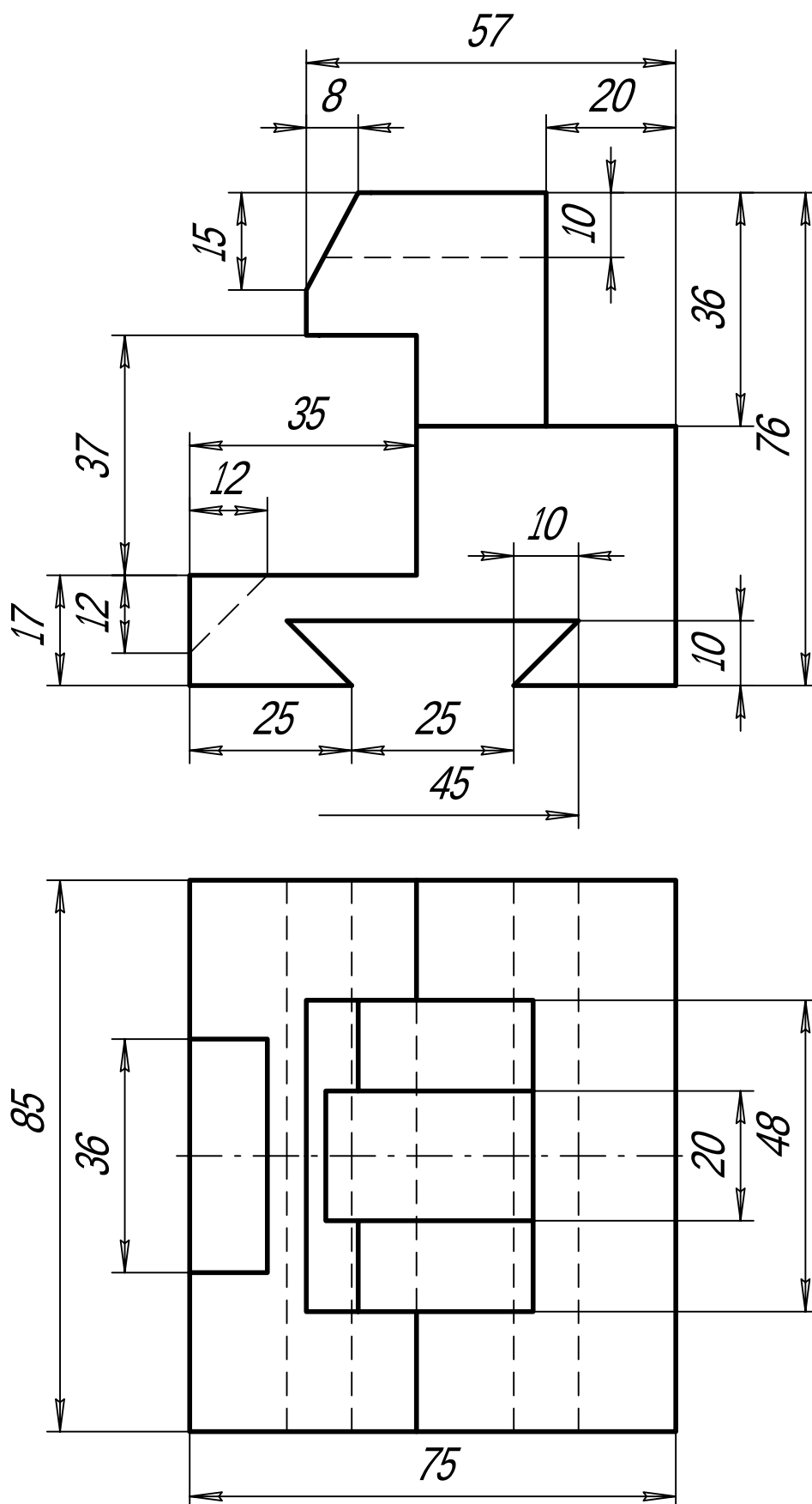


1T.49



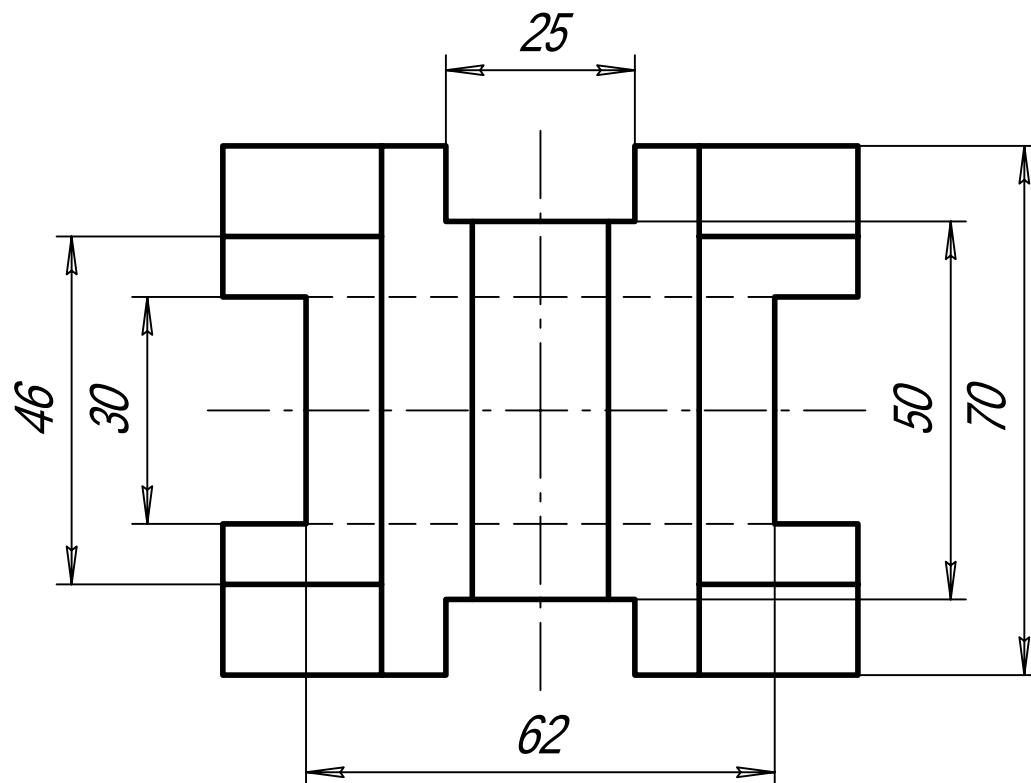
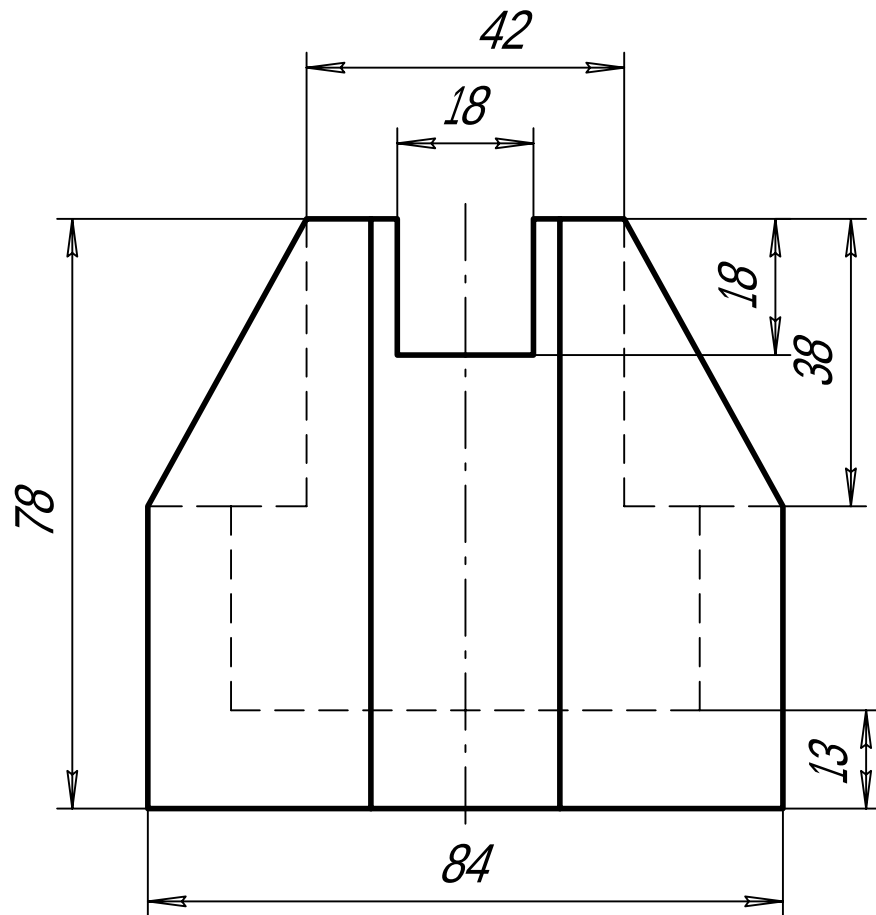


1T.50



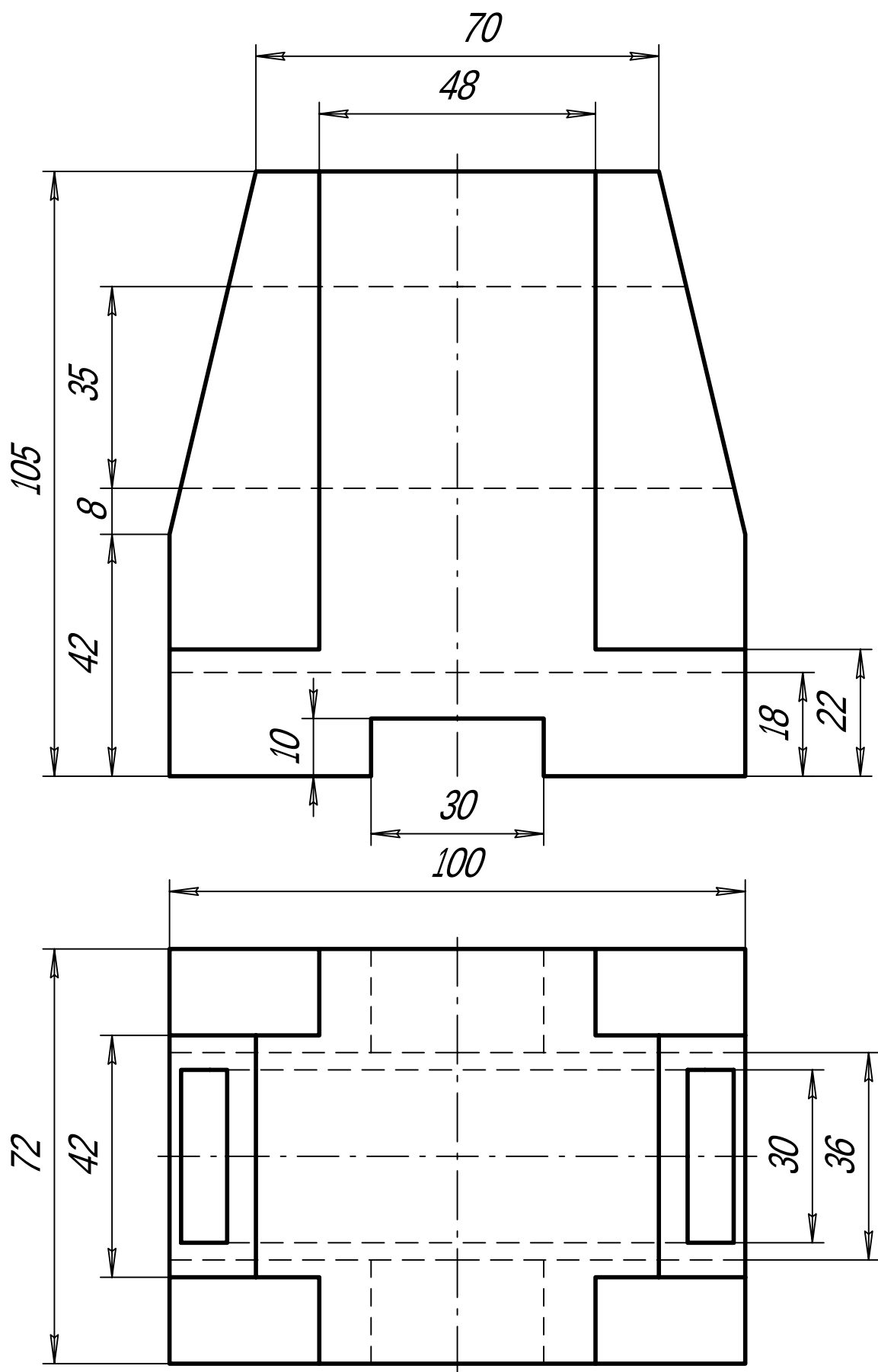


1T.51



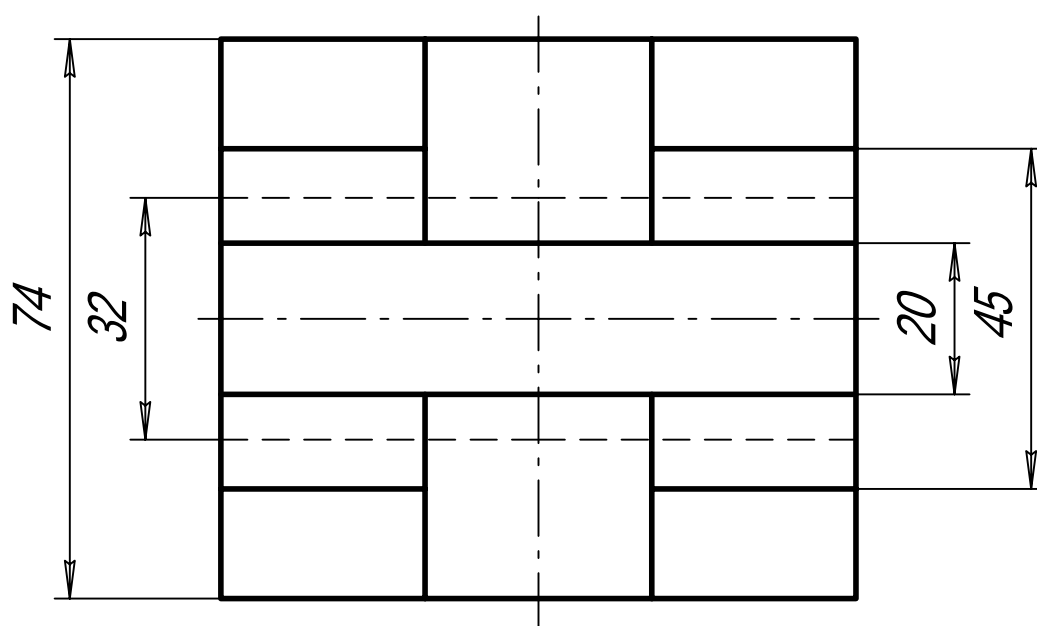
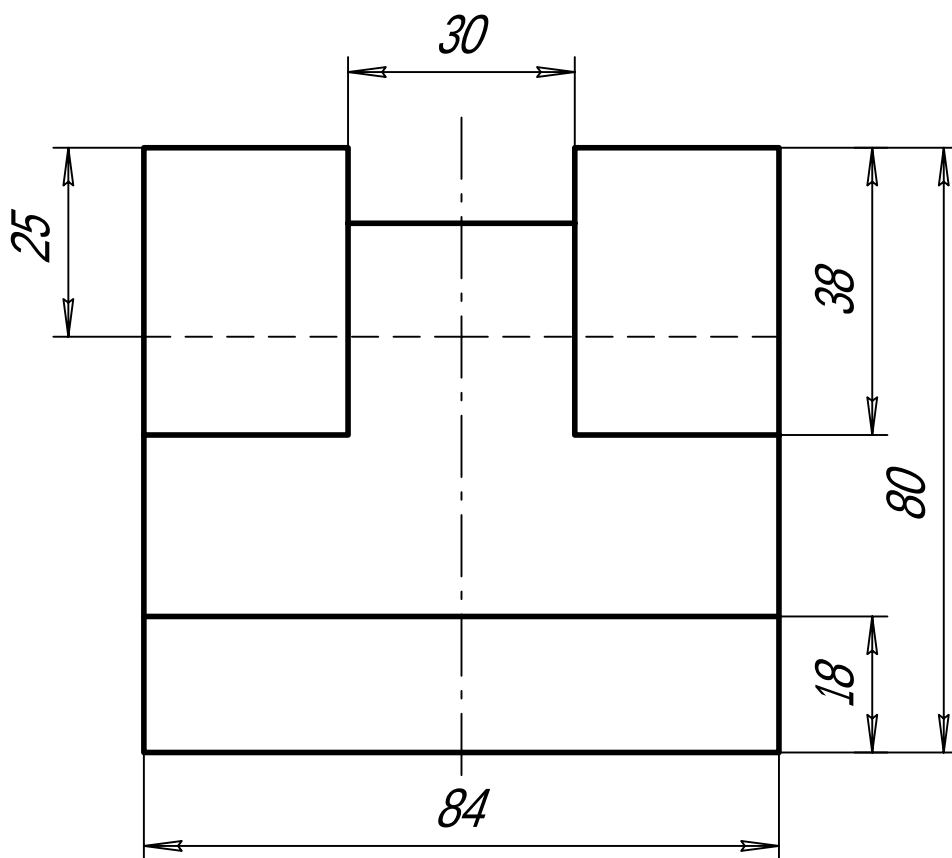


1T.52



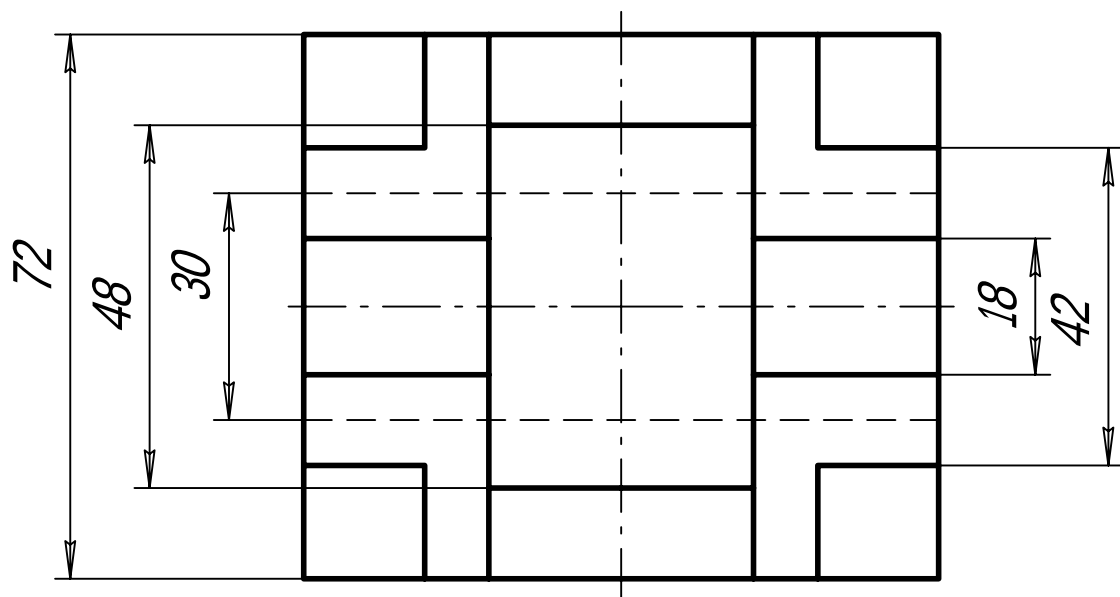
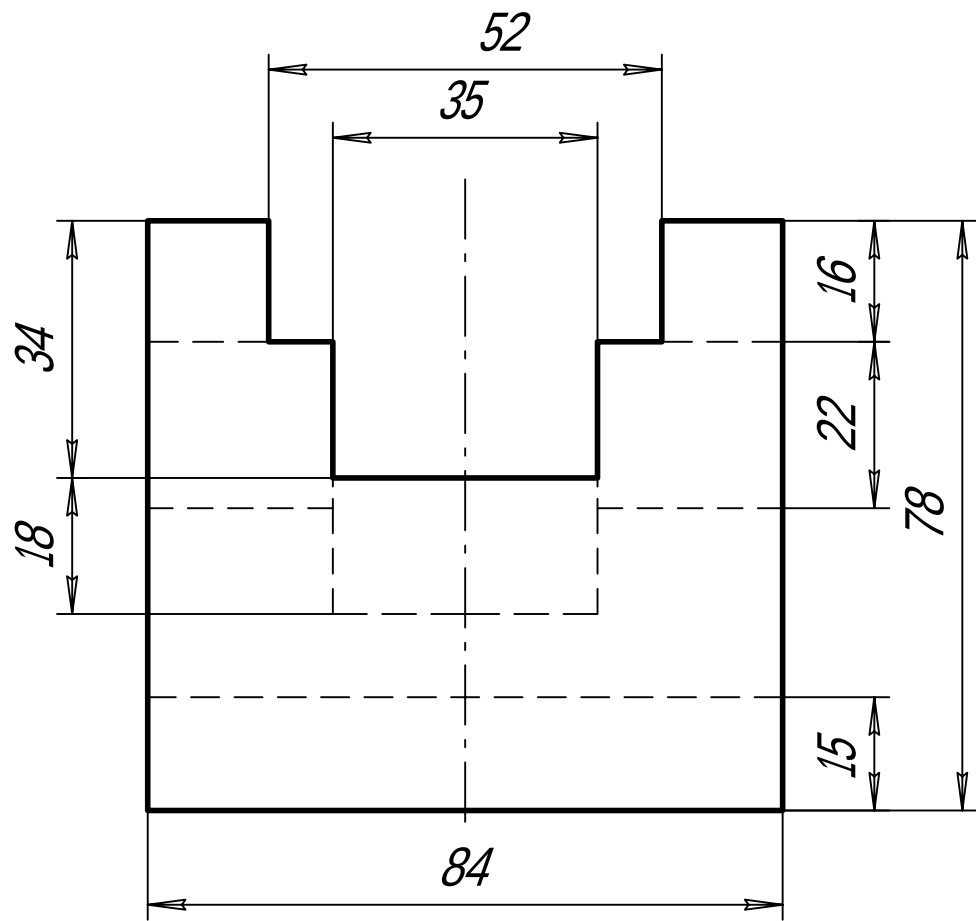


1T.53

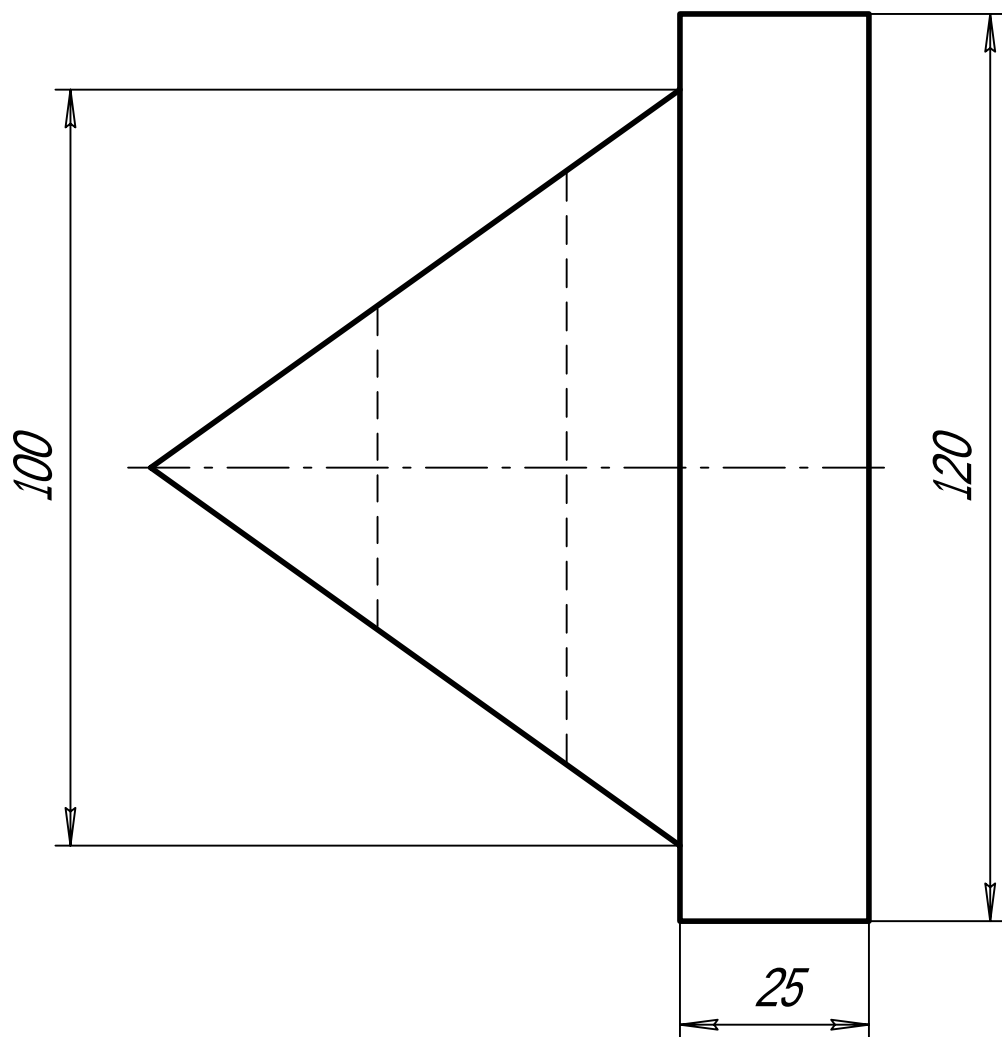


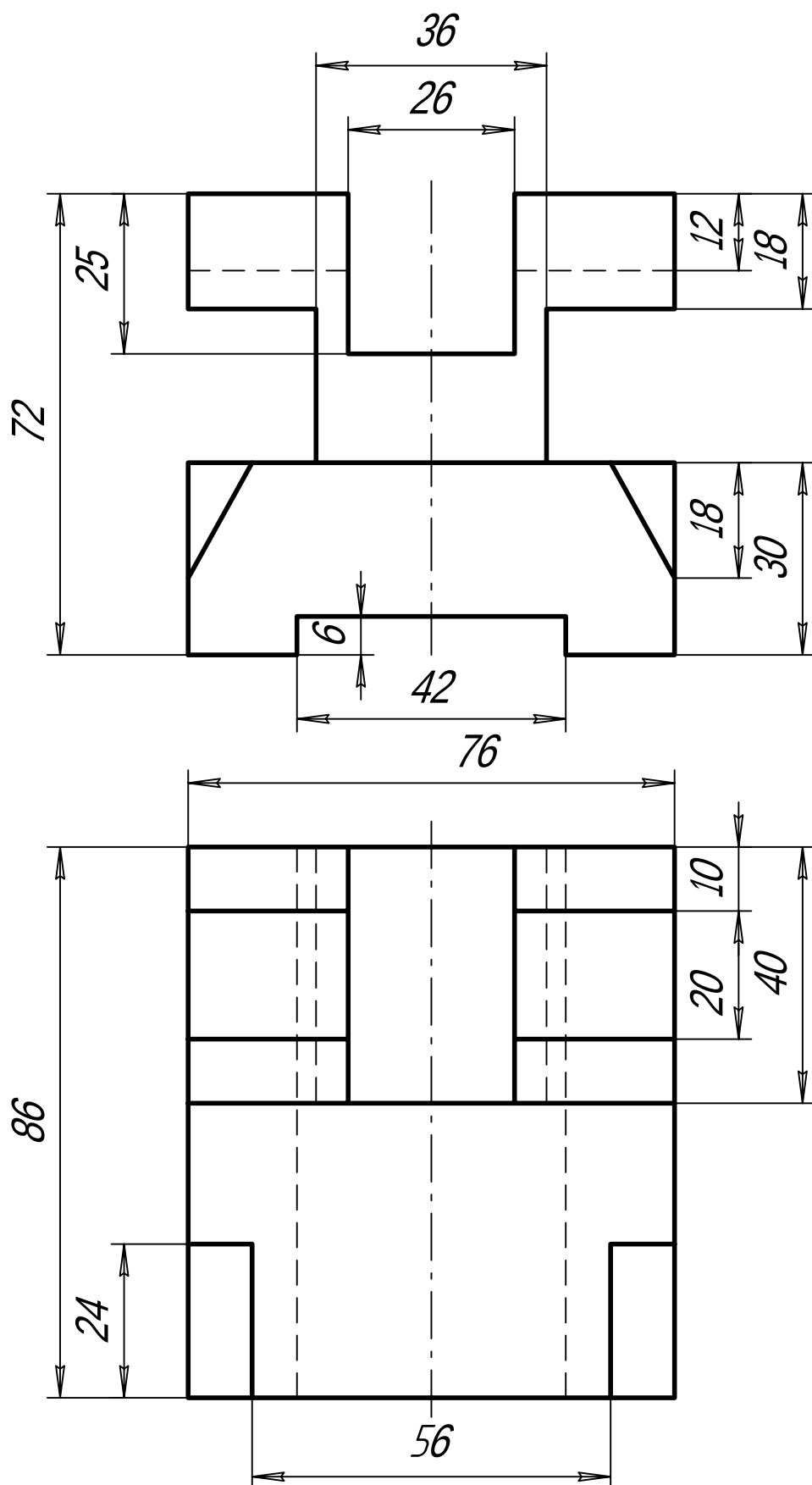


1T.54



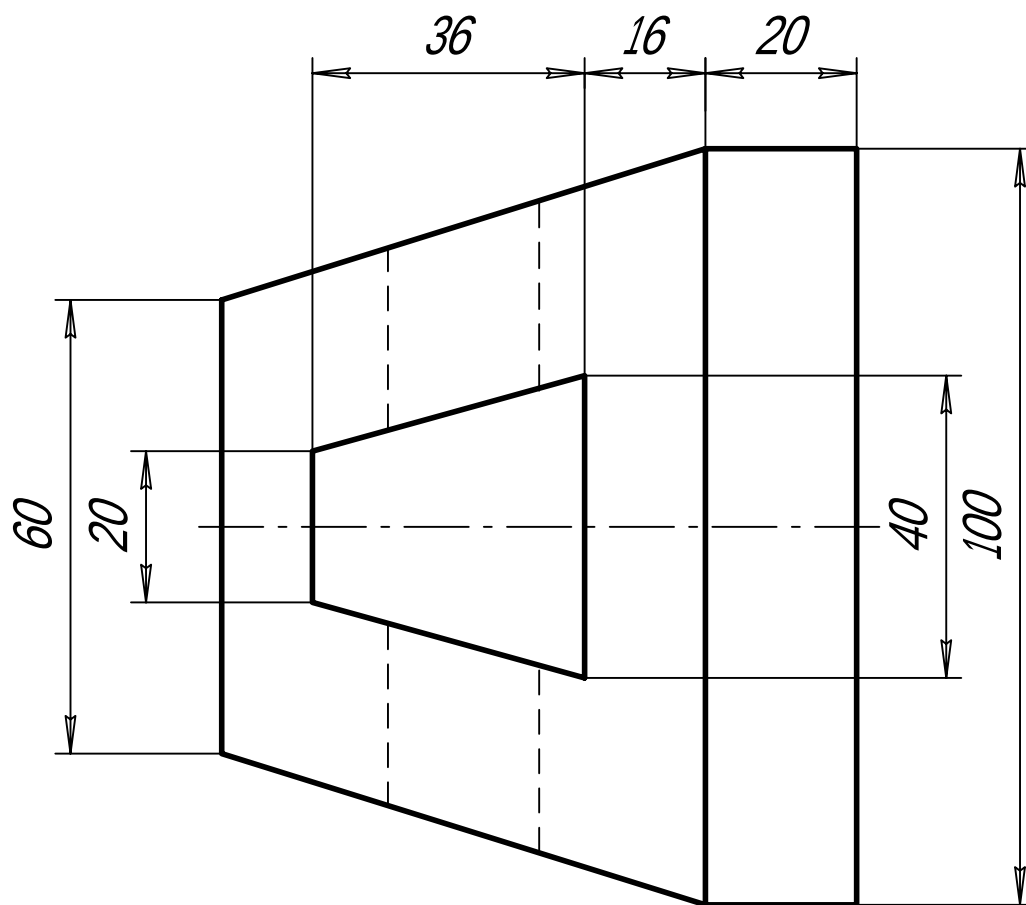
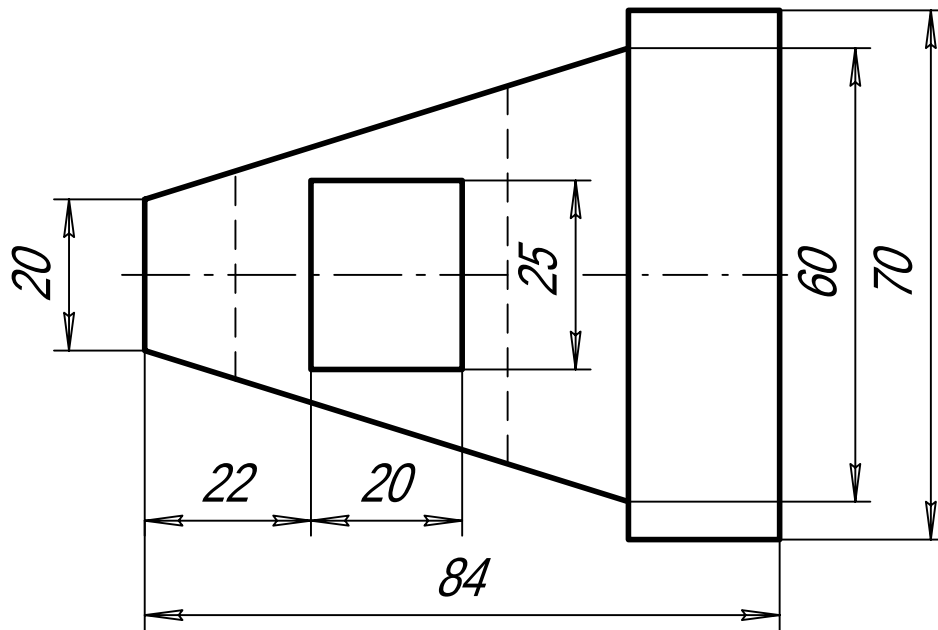
The diagram shows the orthographic projection of a mechanical part. The front view (top) shows a stepped profile with a total width of 95 and a total height of 50. The top surface is sloped, with a horizontal run of 30 and a vertical rise of 20. The side view (bottom) shows a rectangular profile with a width of 25 and a height of 80. The top view (right) shows a rectangular profile with a width of 95 and a height of 80. The part is symmetrical about a vertical centerline, indicated by a dashed line.





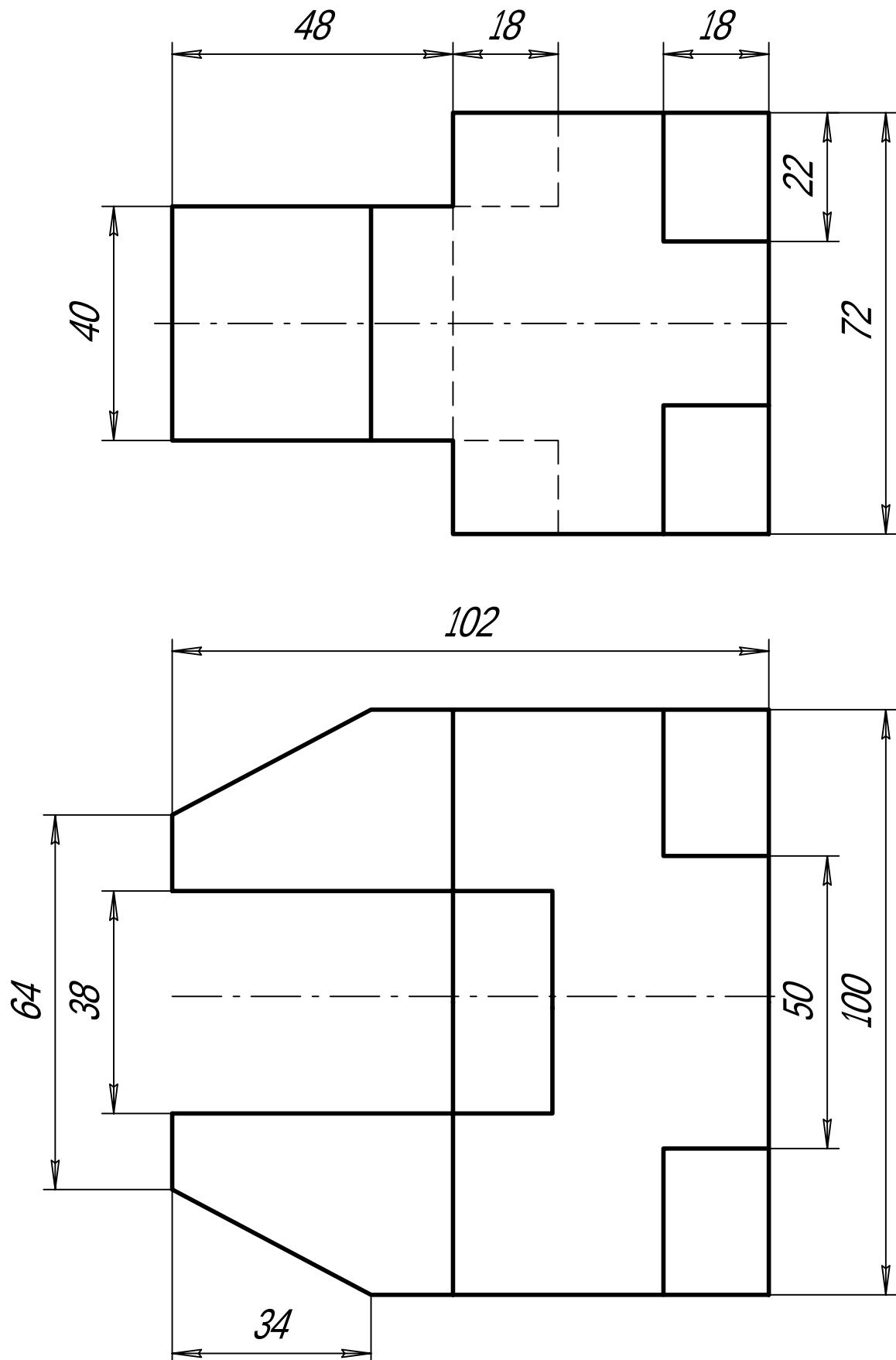


1T.57



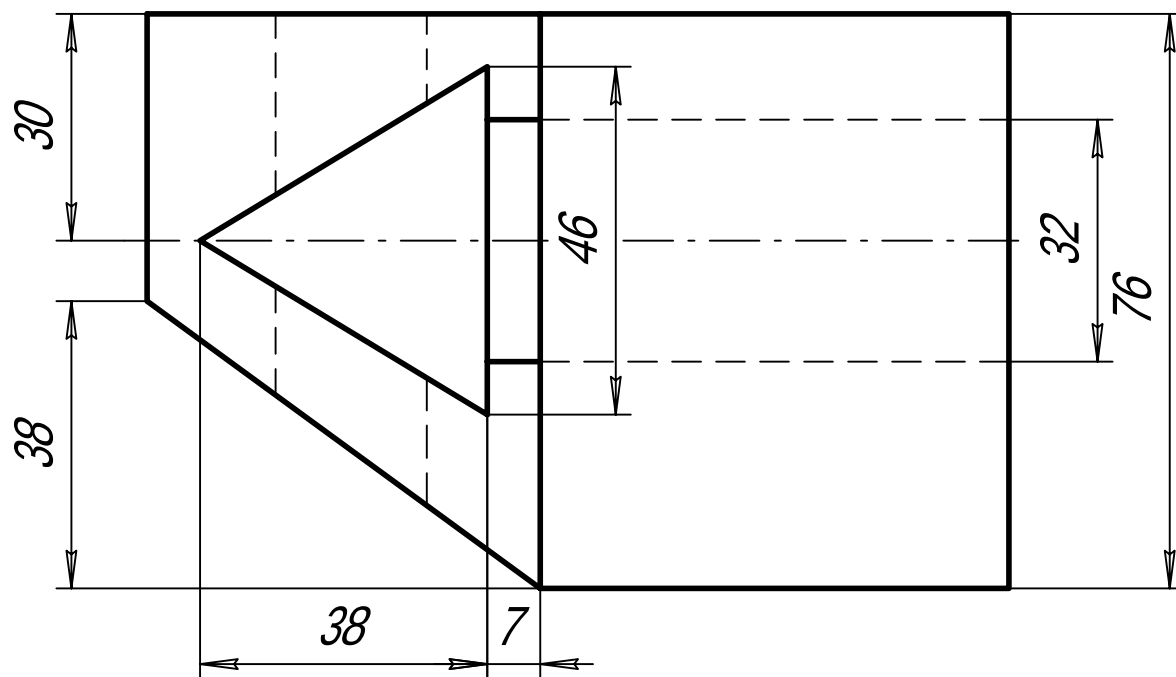
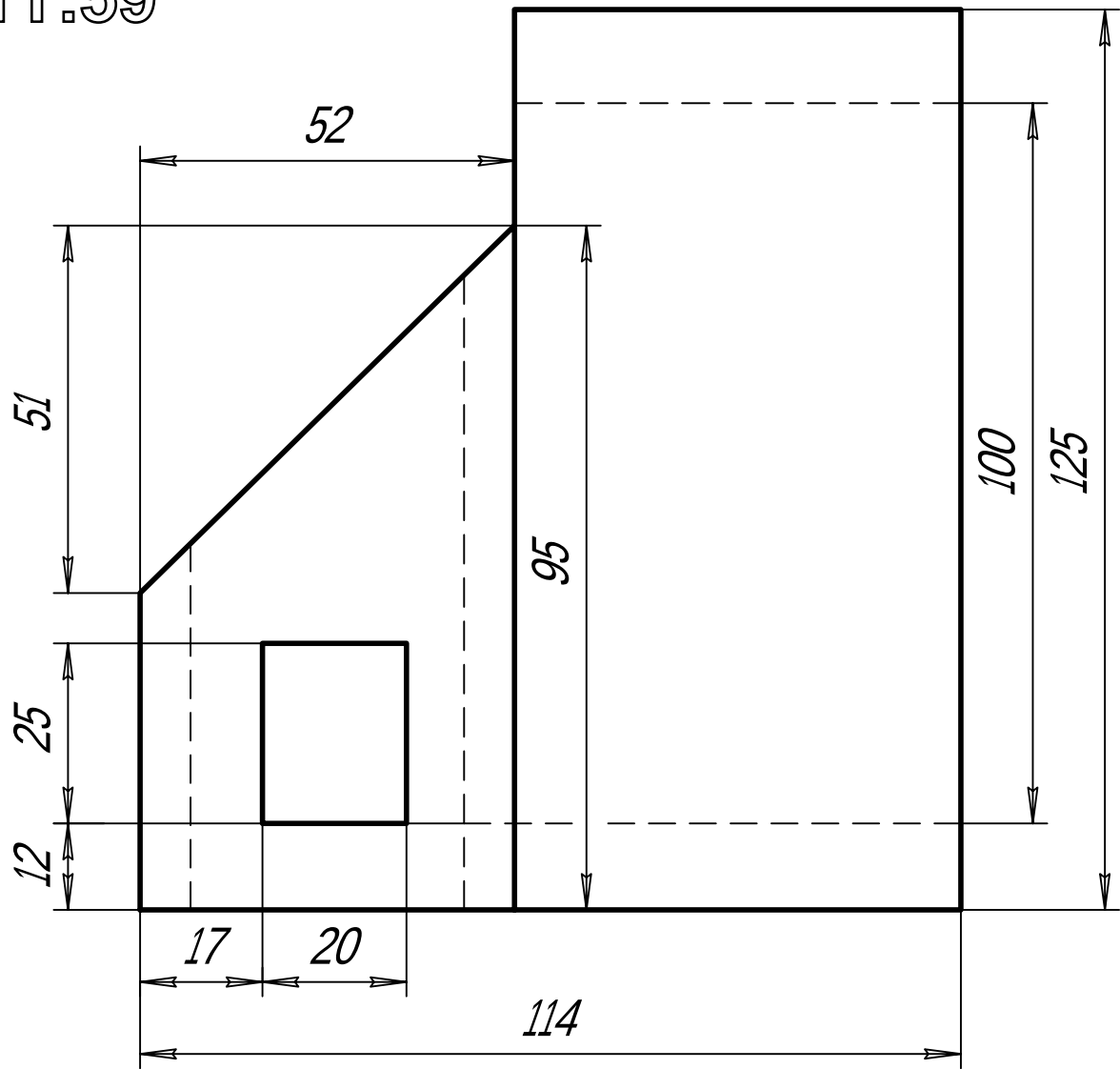


1T.58



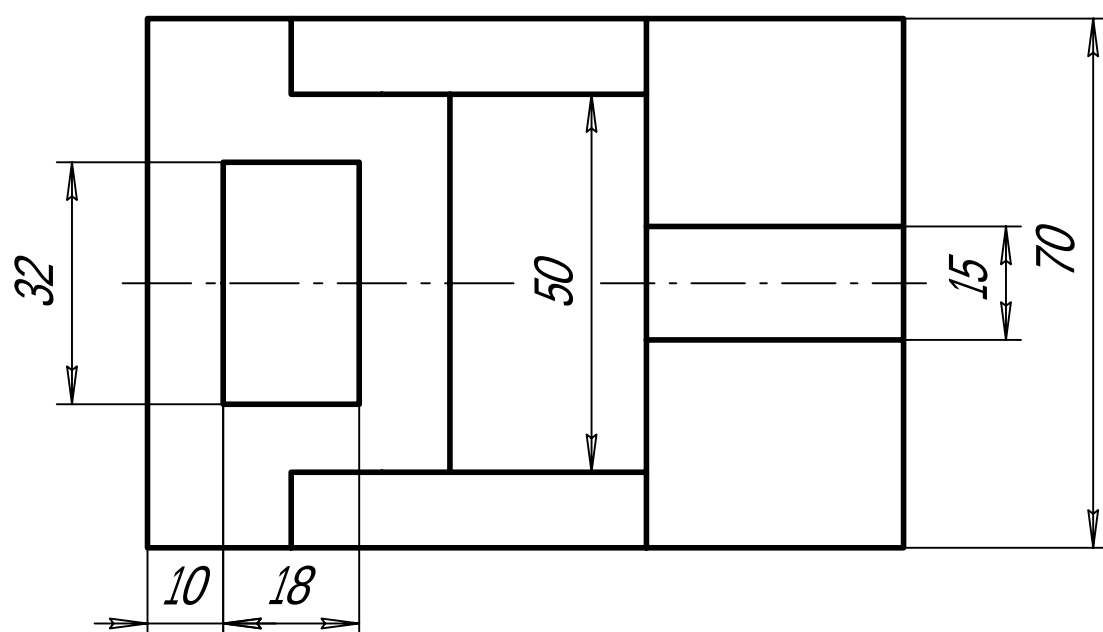
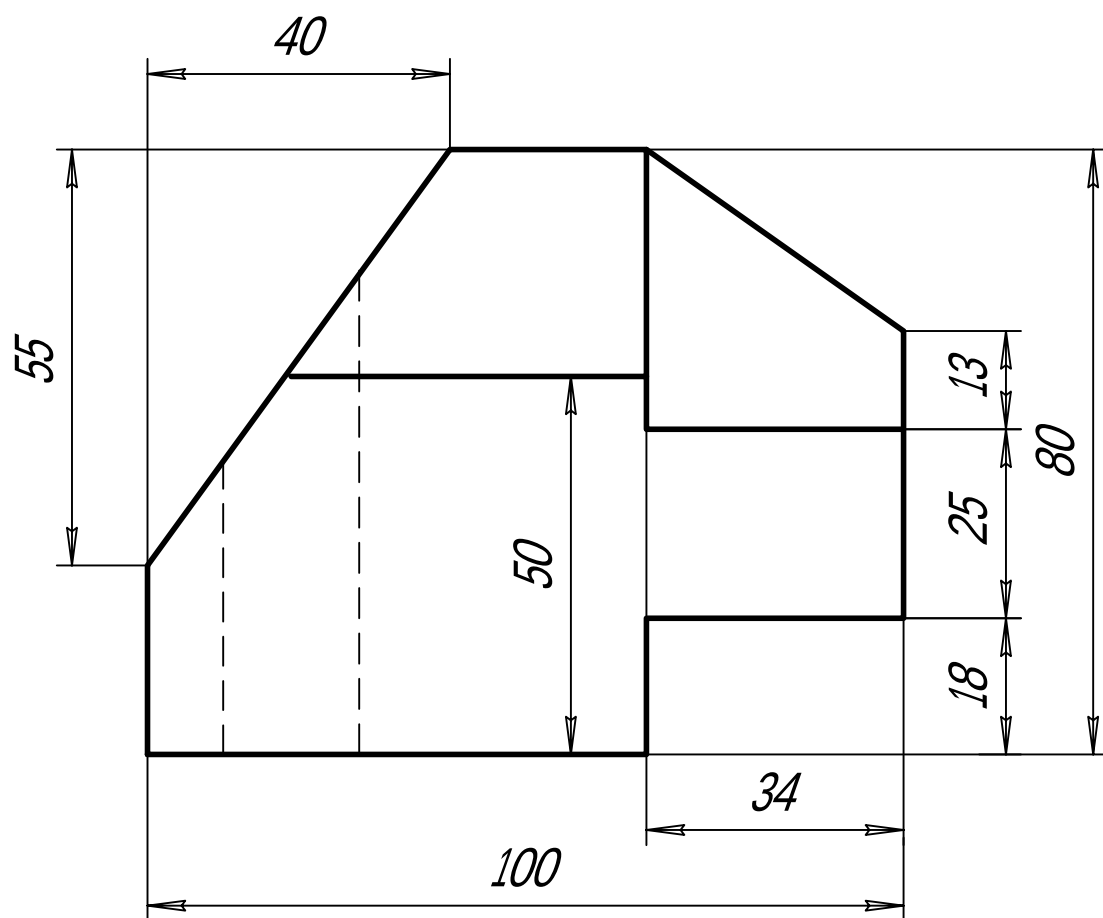


1T.59





1T.60





2Т. ПОСТРОЕНИЕ ВИДОВ (задания 2Т.01..2Т.60)

В условии каждого задания дано аксонометрическое изображение предмета (**рис. 4**). Указаны размеры.

Требуется построить три вида предмета – спереди (главный), сверху и слева, изобразив его внутренний контур штриховыми линиями. Если в условиях задания не оговорена глубина отверстия (паза), то оно выполнено насквозь.

Пример выполнения задания показан на **рис. 5**.

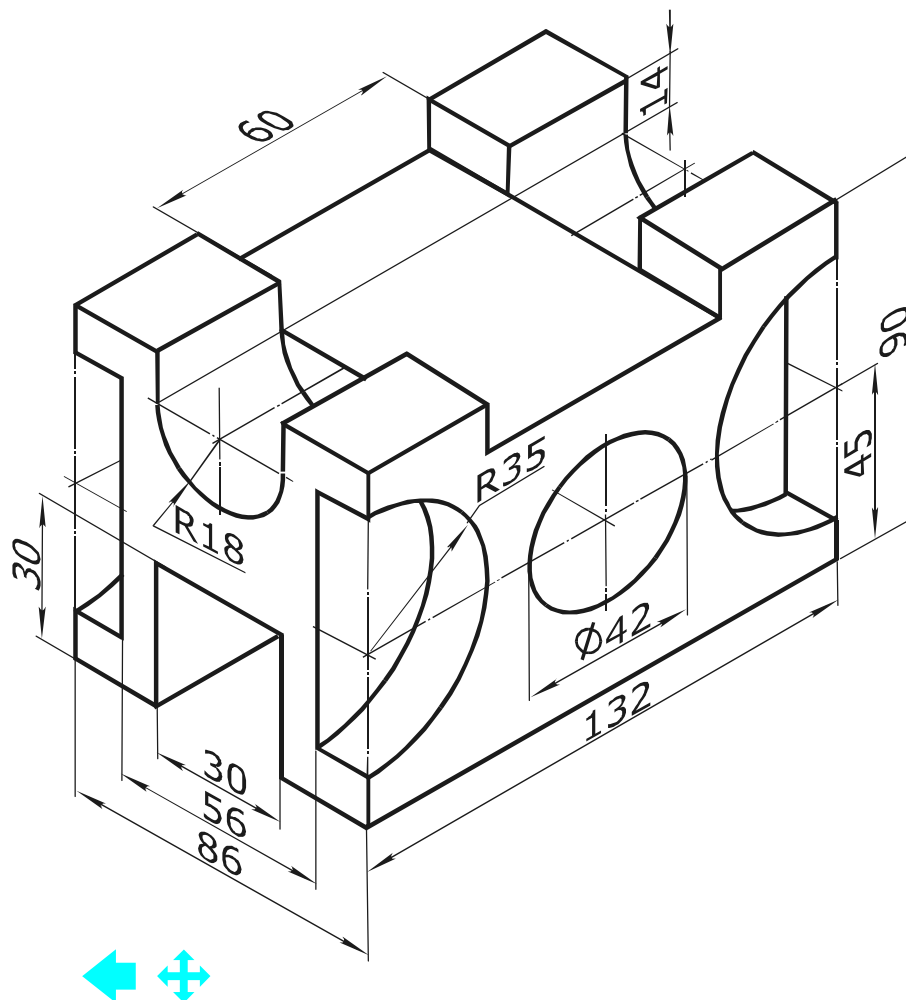


Рис. 4. Пример задания из раздела 2Т

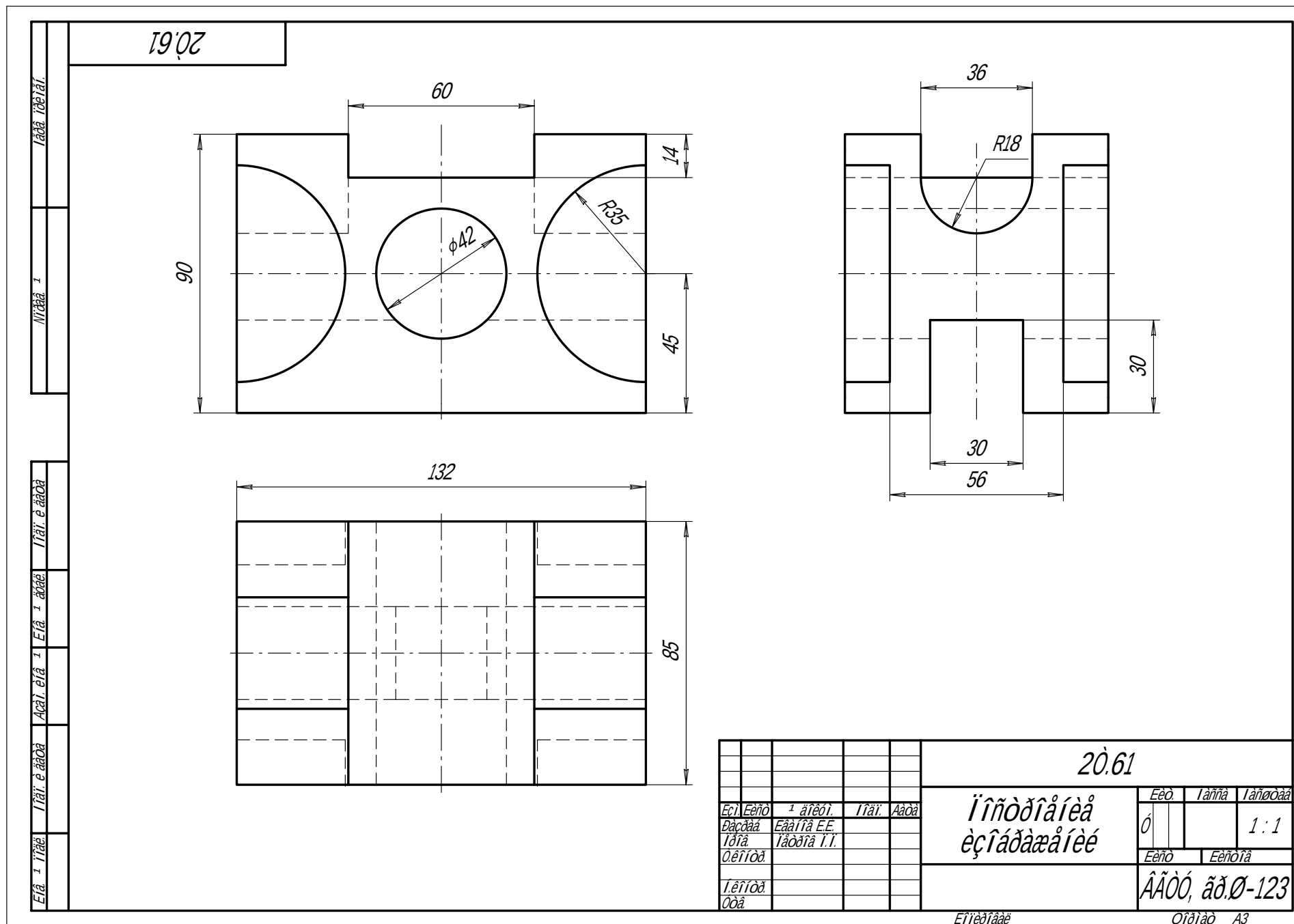
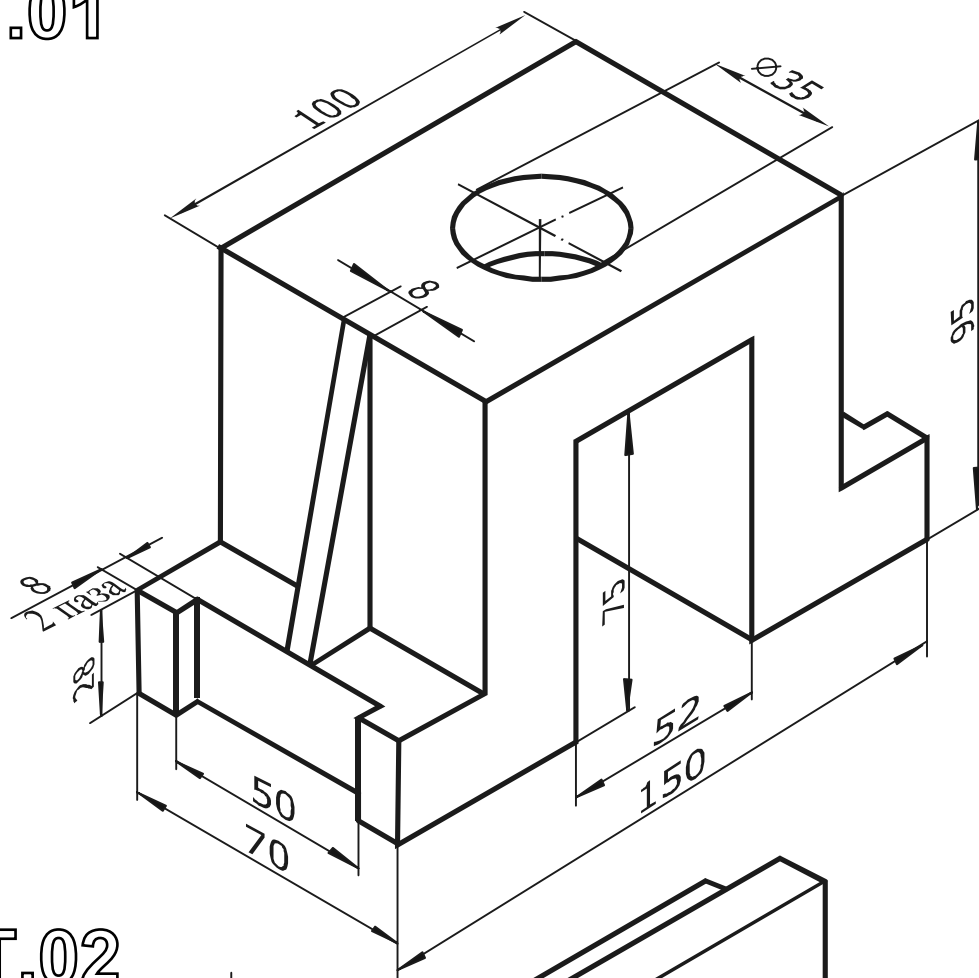


Рис. 5. Пример выполнения задания из раздела 2Т

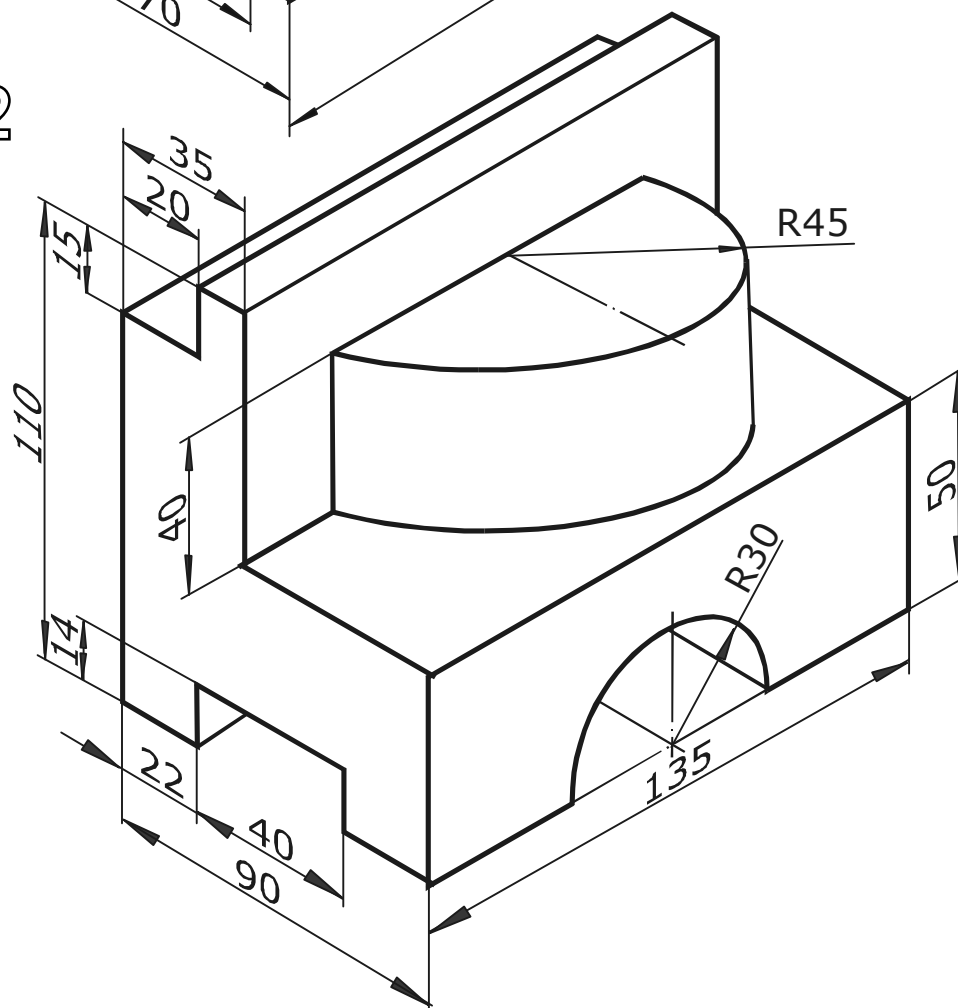




2T.01

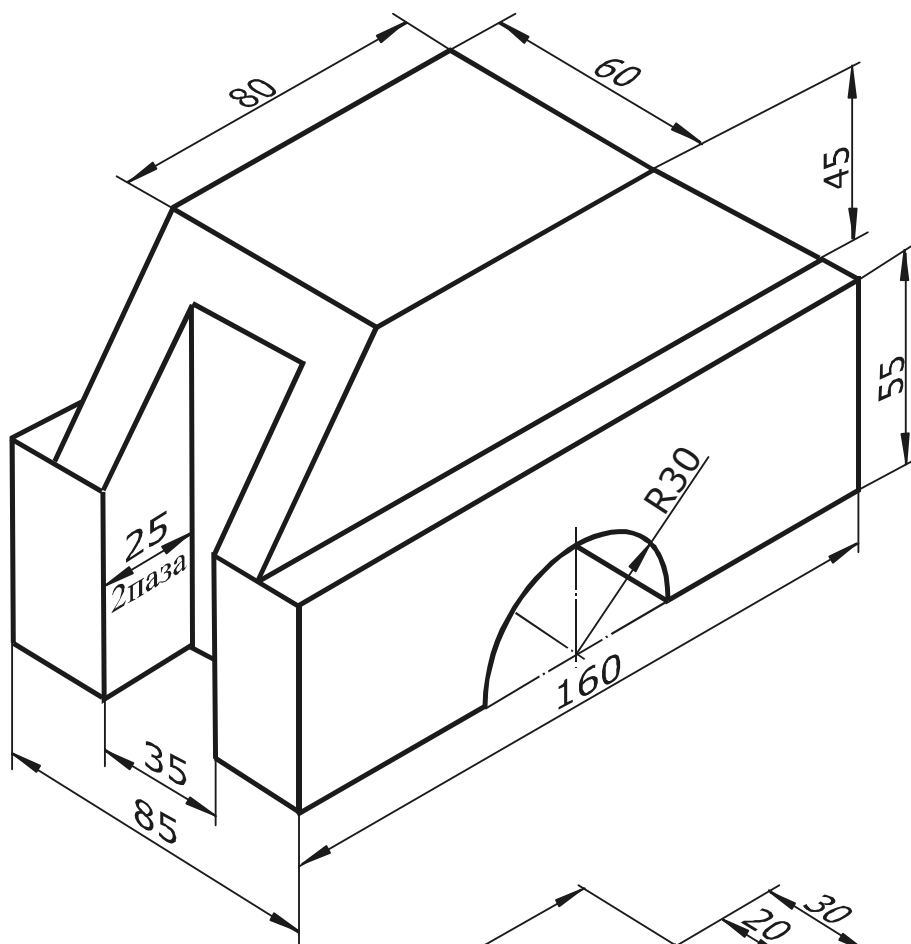


2T.02

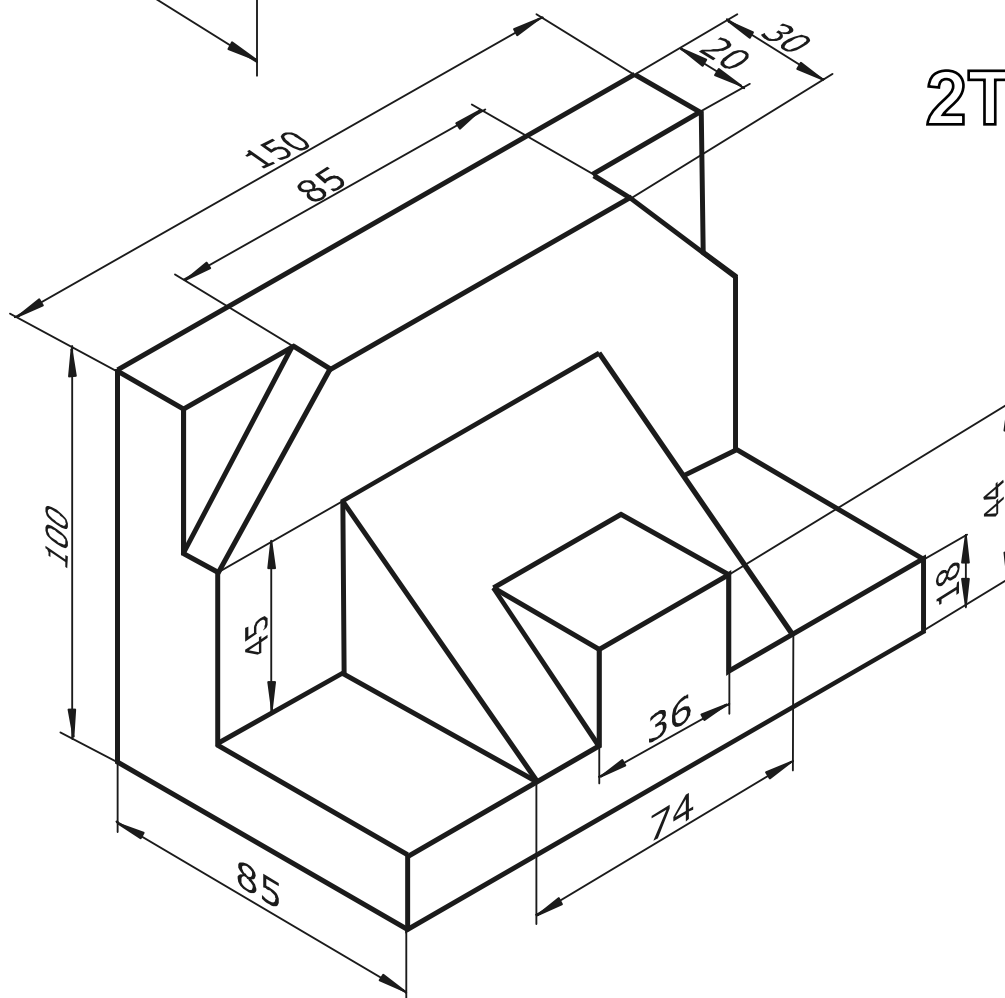




2T.03

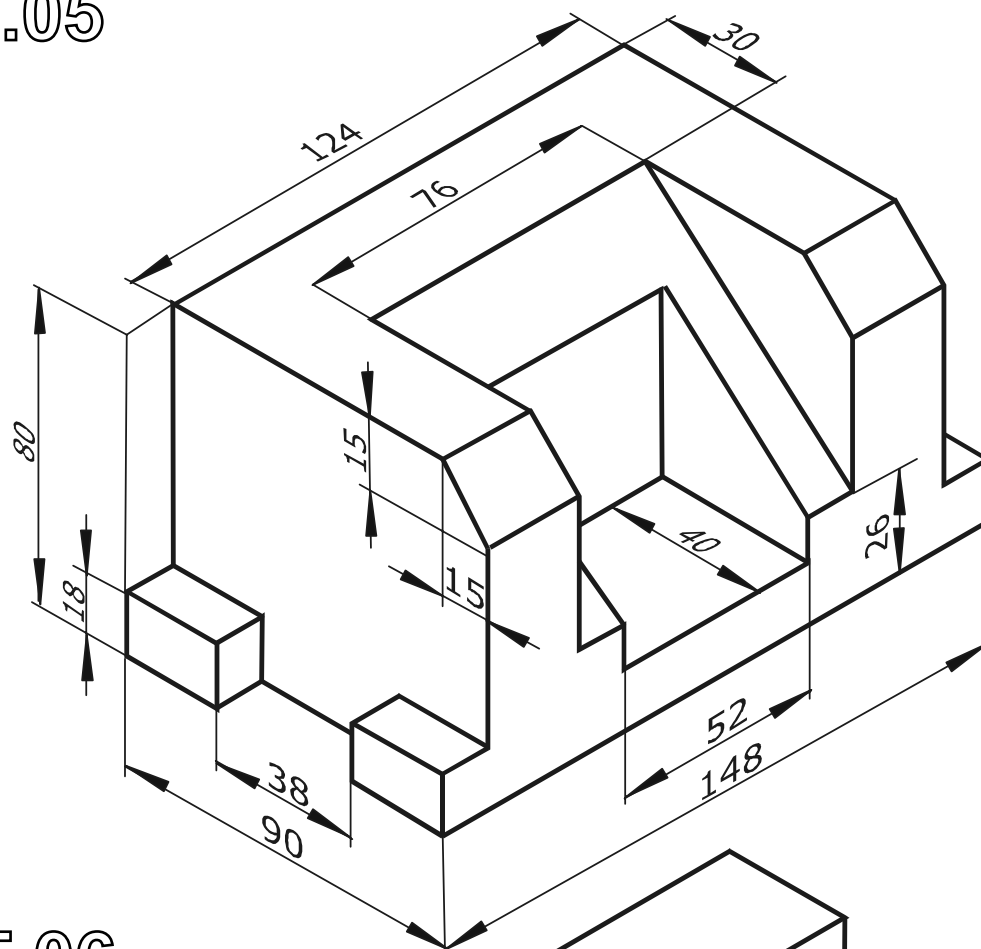


2T.04

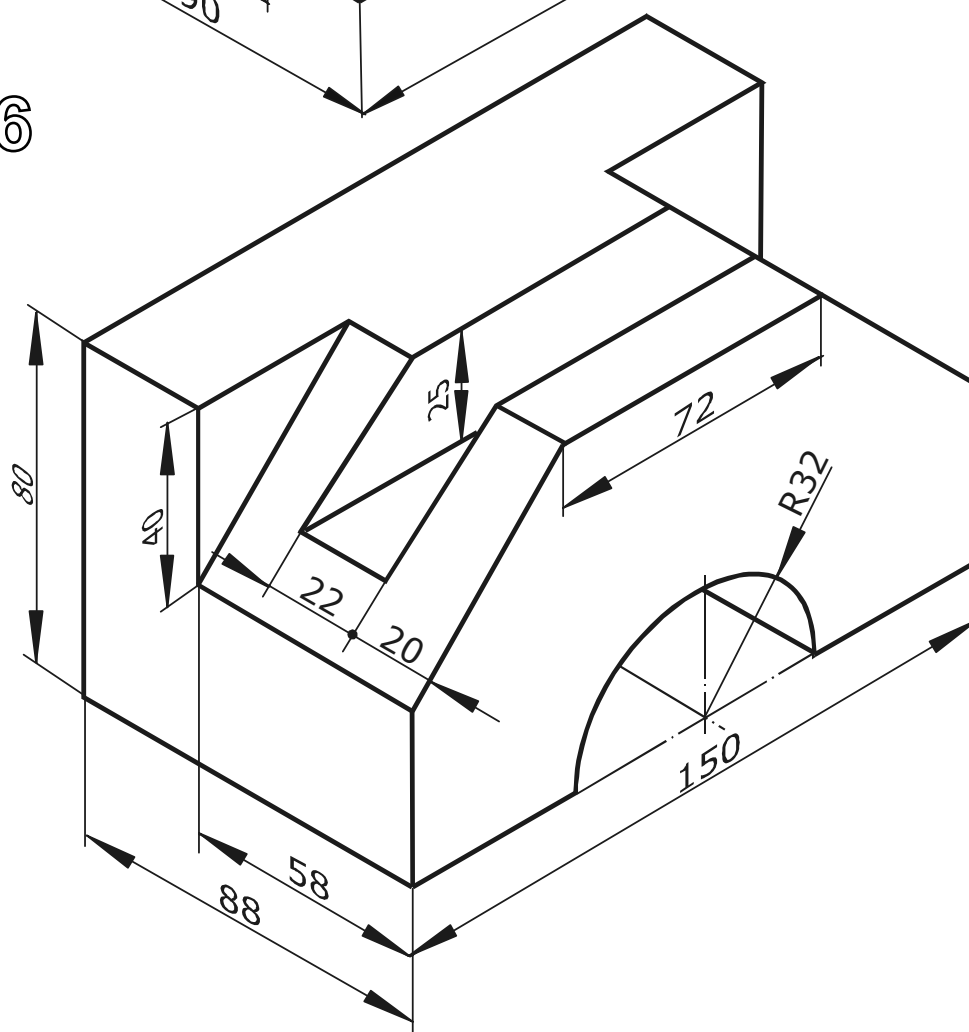




2T.05



2T.06



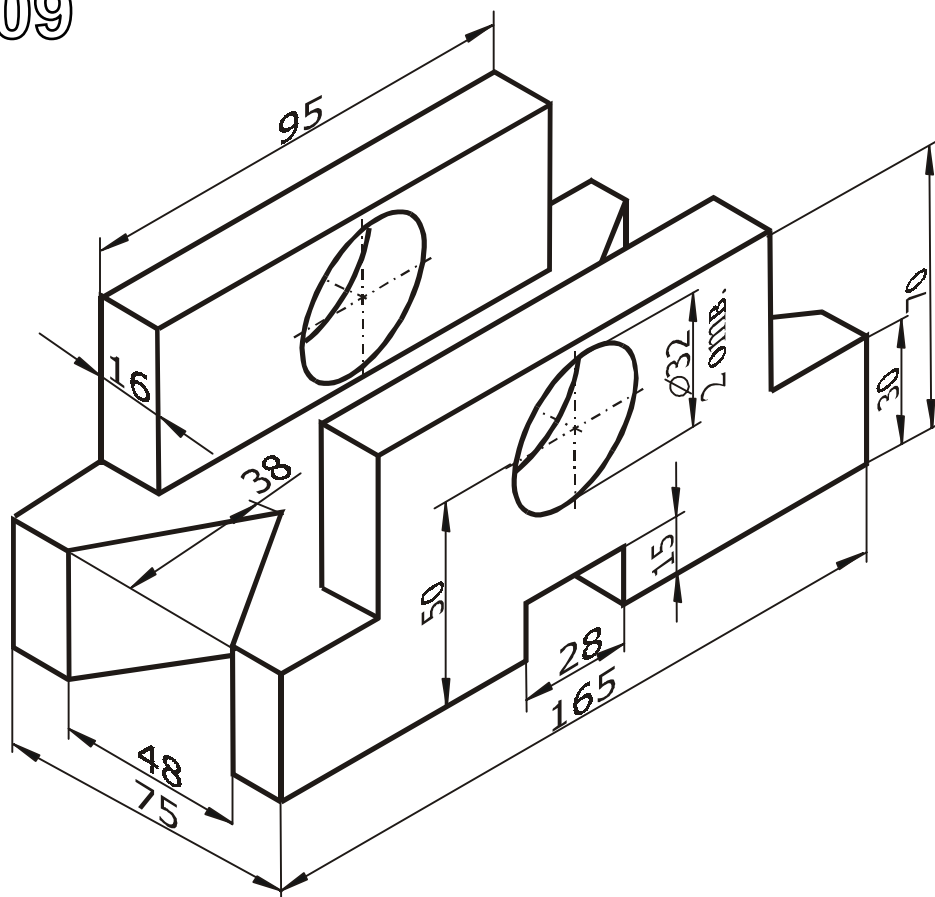
[illegible]

Isometric view of a mechanical part. The part features a base with a central rectangular cutout. The overall dimensions are as follows:

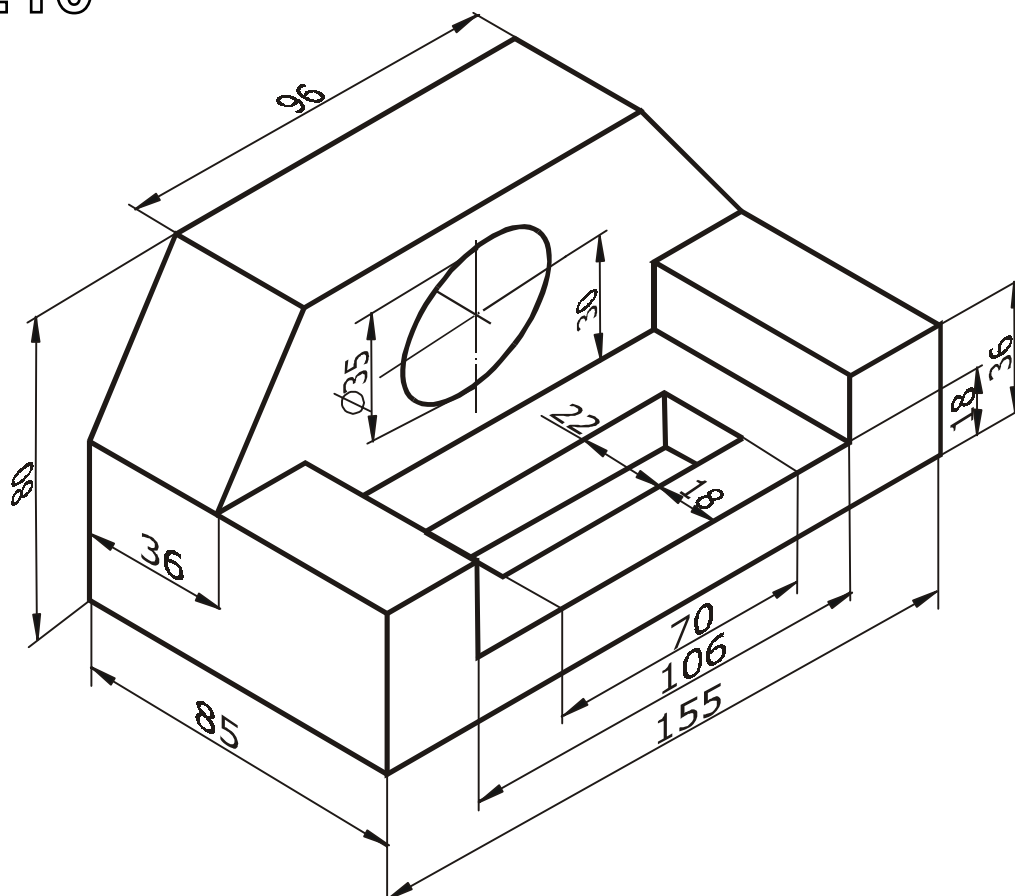
- Overall width: 160
- Overall height: 90
- Base width (left side): 82
- Base width (right side): 50
- Base height (left side): 20
- Base height (right side): 30
- Central cutout width: 106
- Central cutout height: 44
- Top surface width: 82
- Top surface height: 66
- Top surface hole diameter: $\varnothing 38$



2T.09

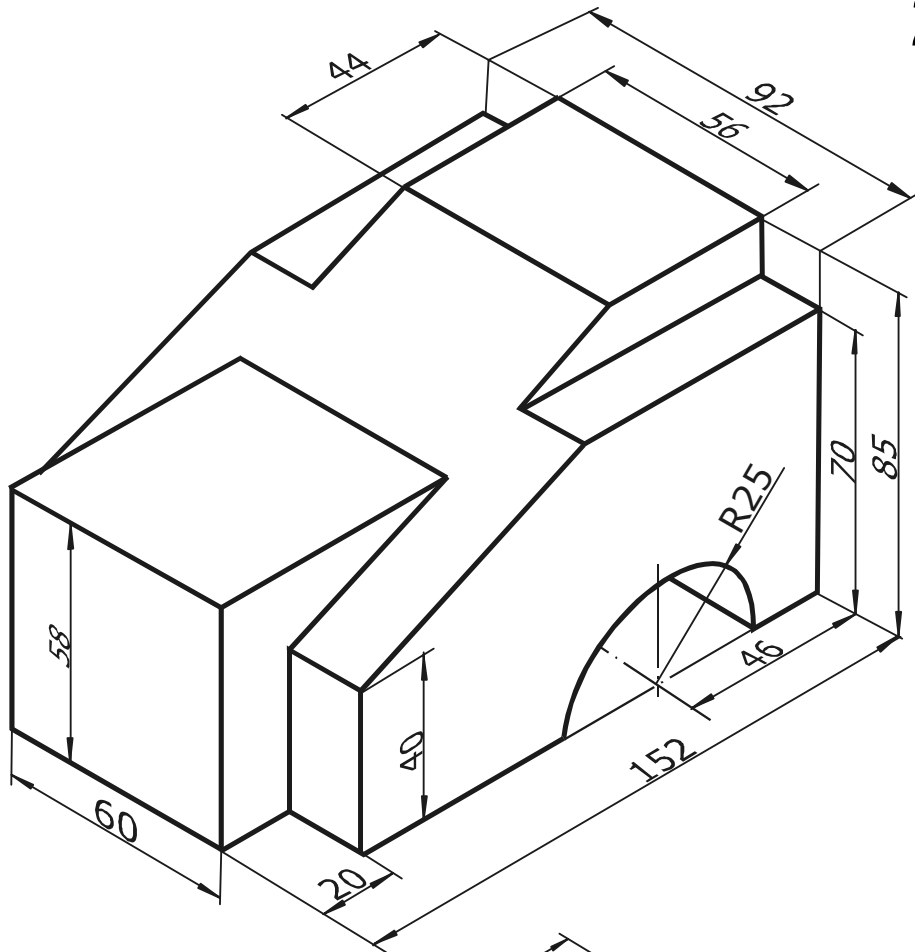


2T.10

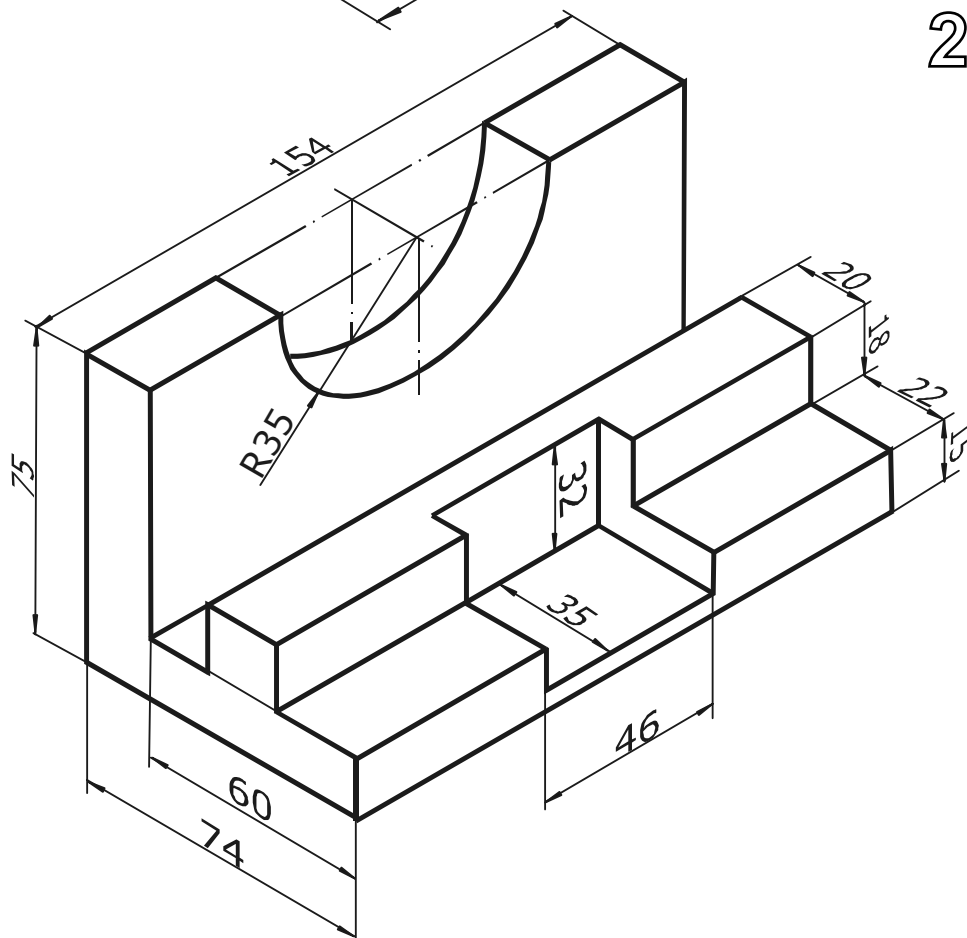




2T.11

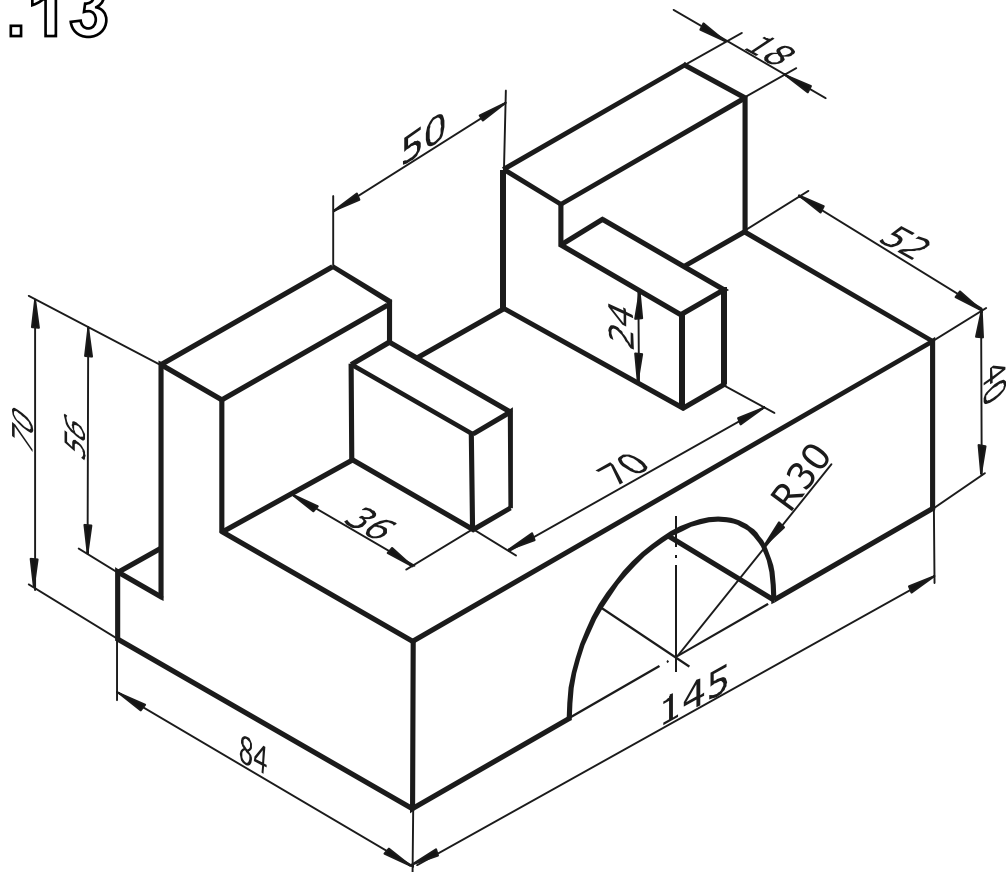


2T.12

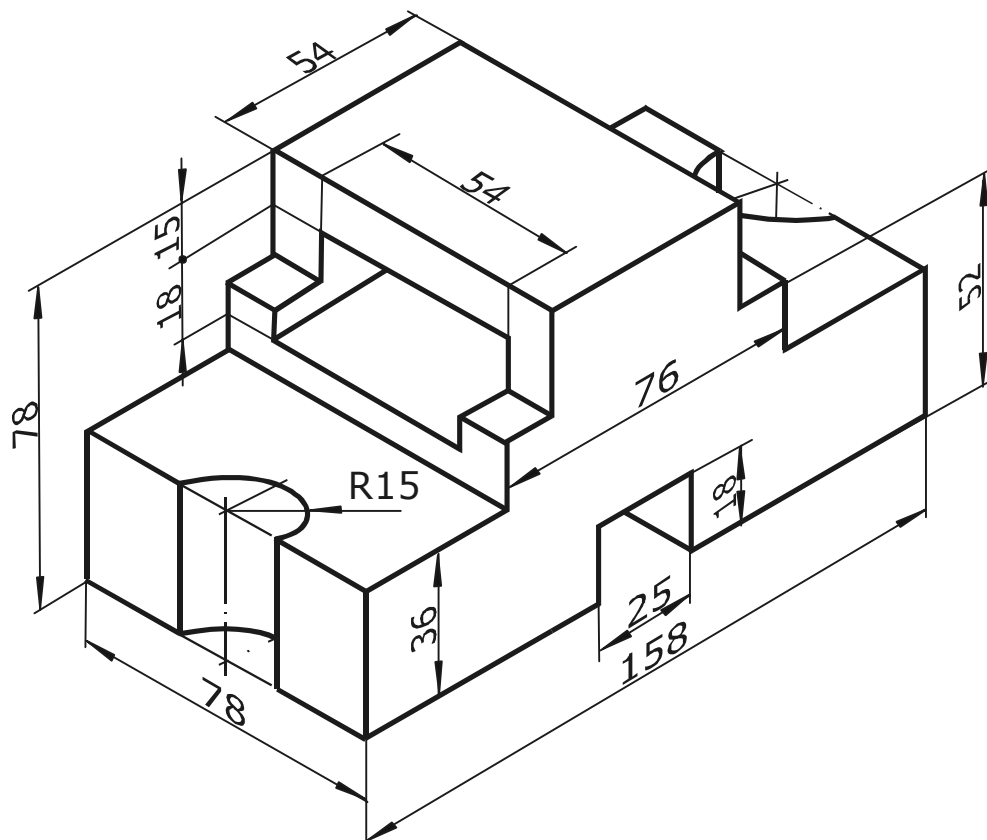




2T.13



2T.14



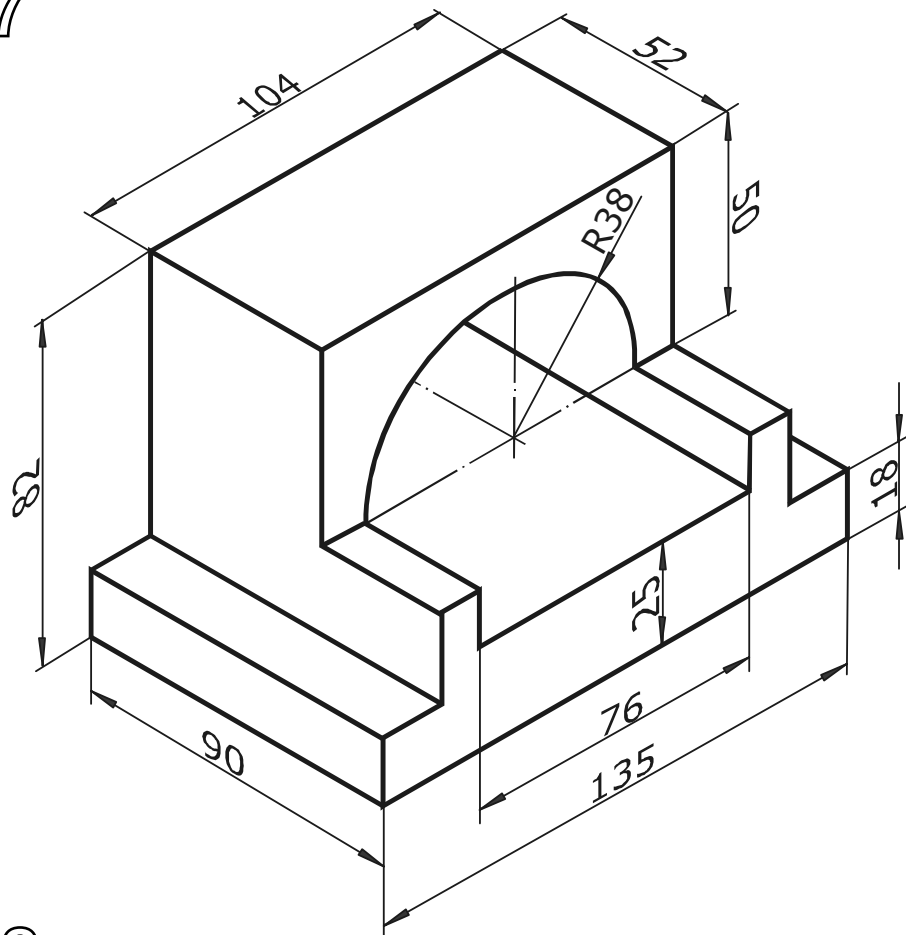
Isometric view of a mechanical part. Dimensions include: 130, 55, 84, 60, 30, 10, 38, 155, 20, 10, 52, 80, 65, and 2.

Isometric drawing of a mechanical part with the following dimensions:

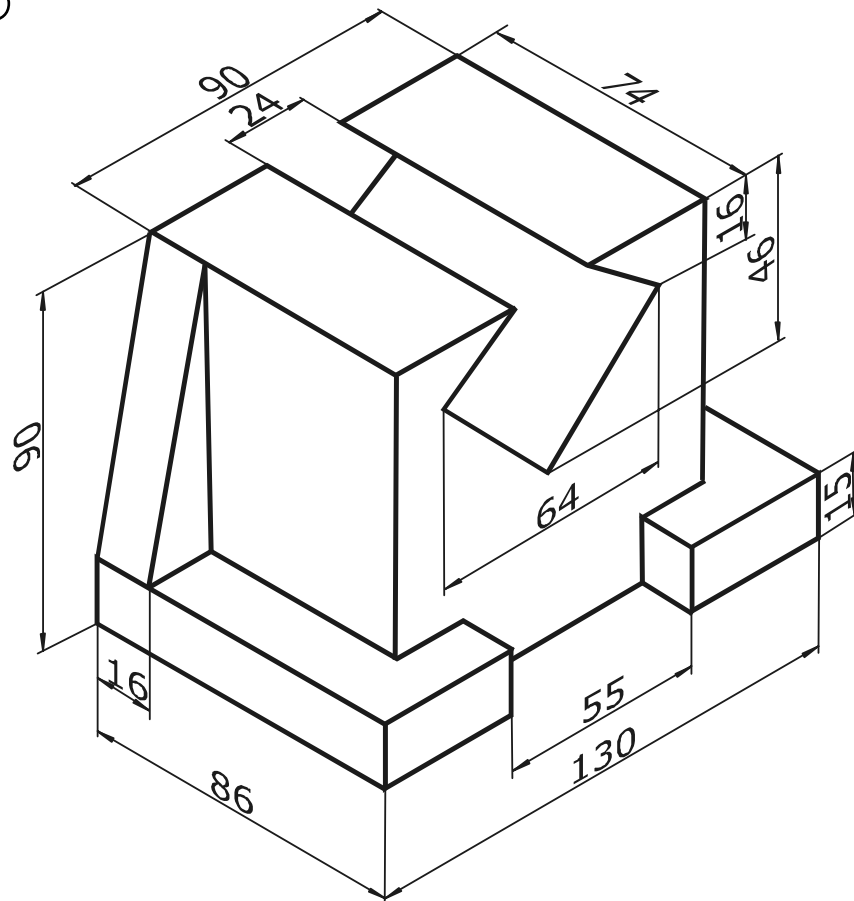
- Overall length: 160
- Overall width: 76
- Overall height: 22
- Top surface width: 65
- Top surface depth: 16
- Top surface radius: R35
- Bottom surface width: 94
- Bottom surface depth: 66
- Bottom surface radius: R24
- Bottom surface thickness: 10
- Bottom surface chamfer: 2 паза



2T.17

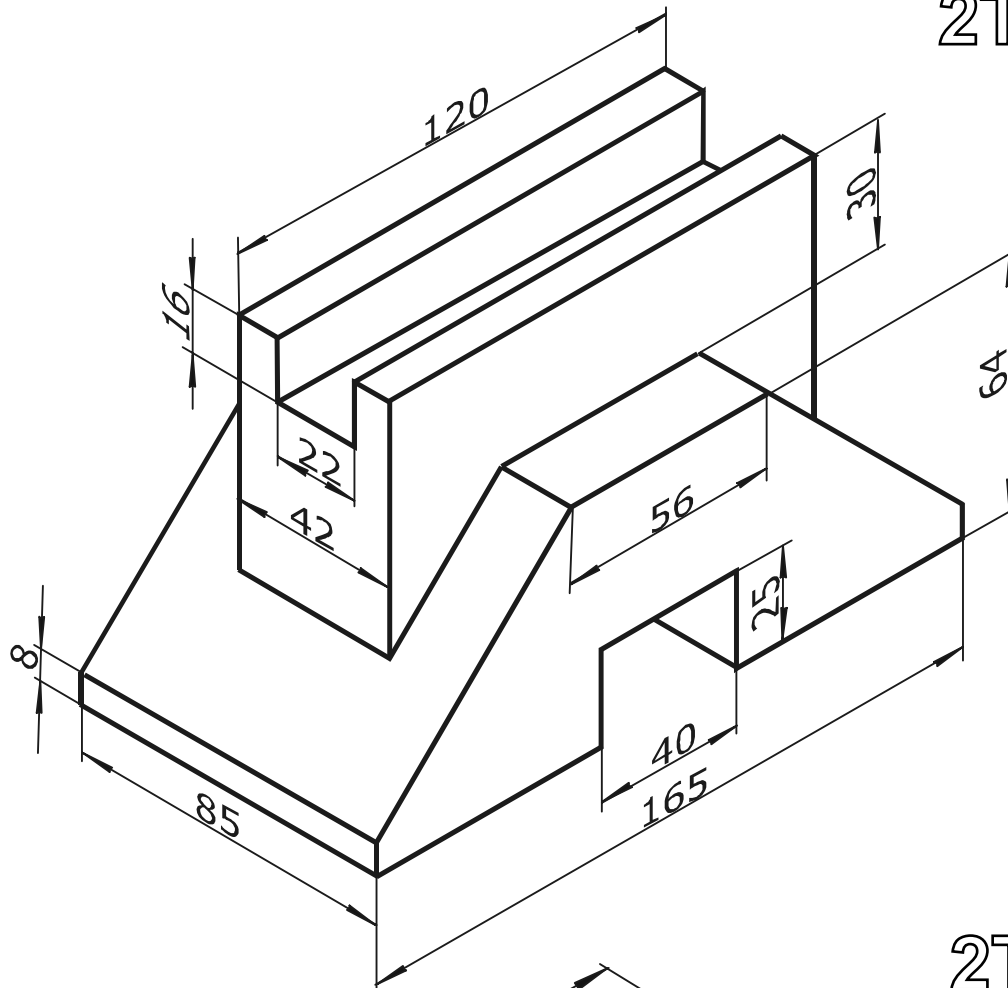


2T.18

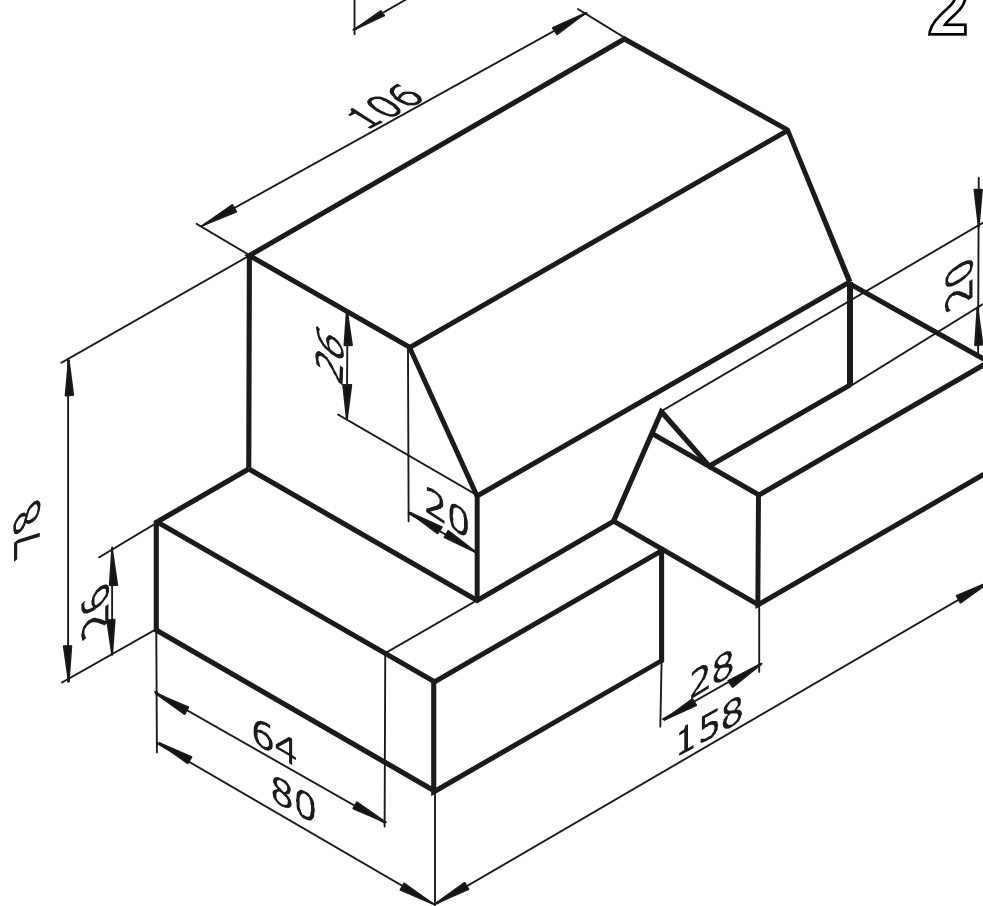




2T.19

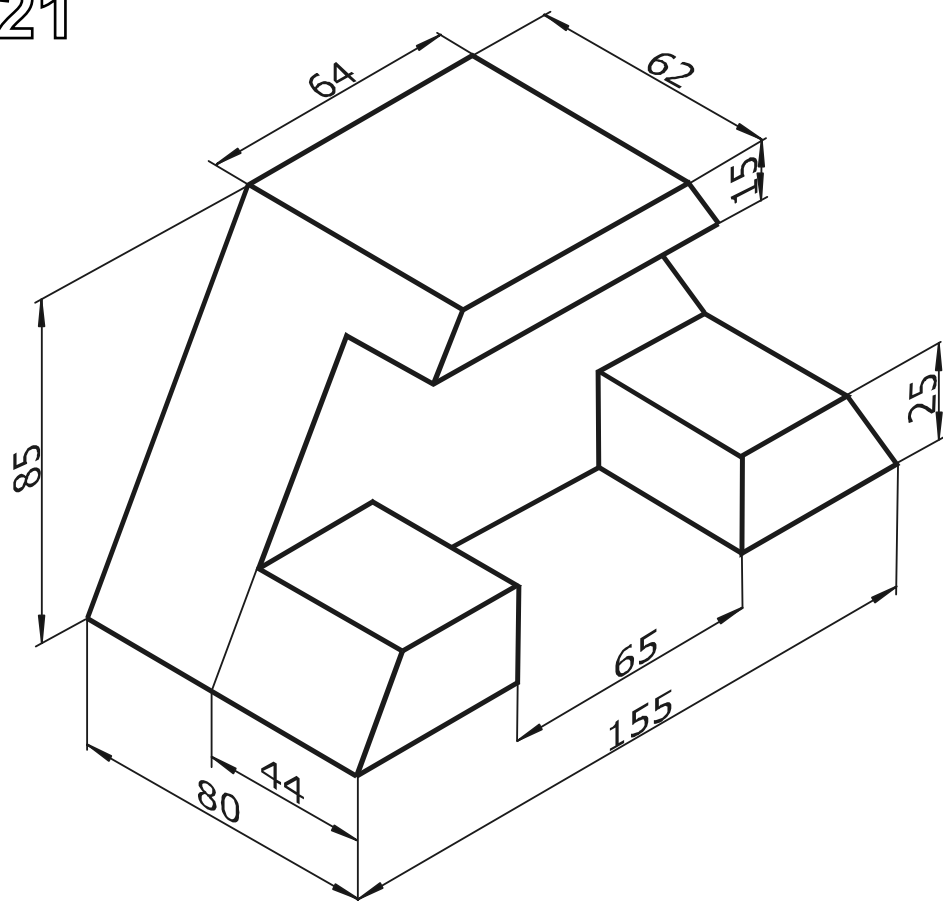


2T.20

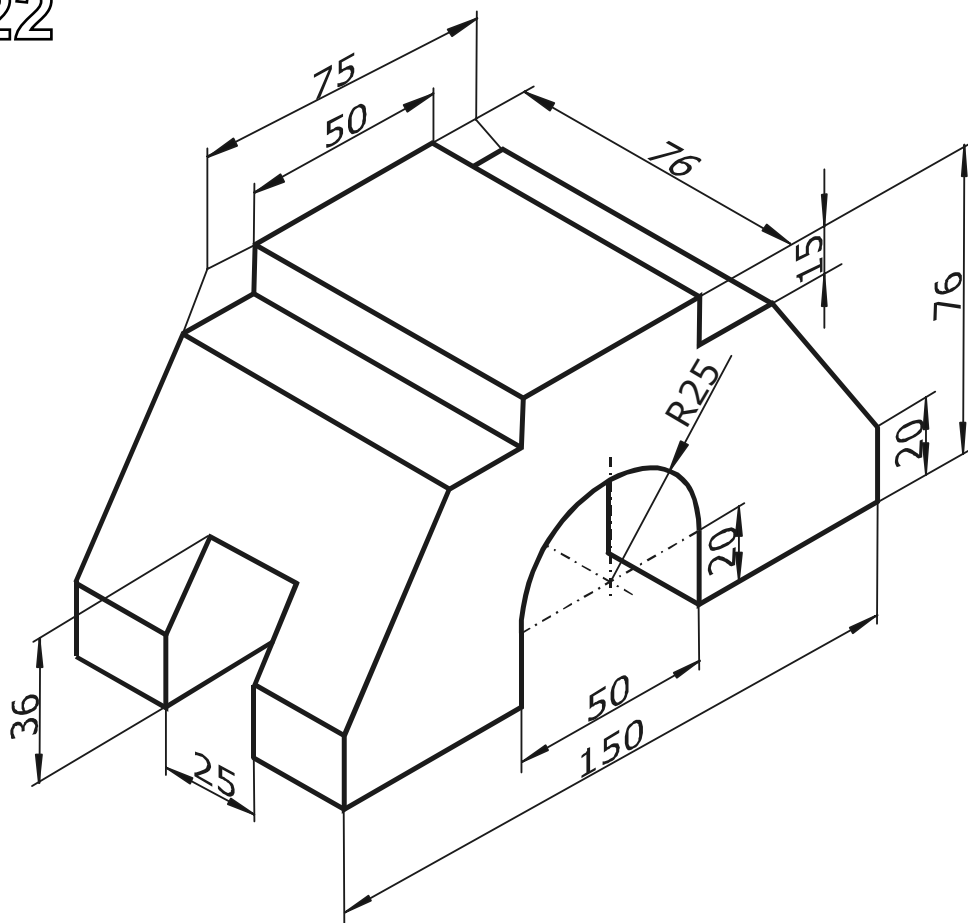




2T.21

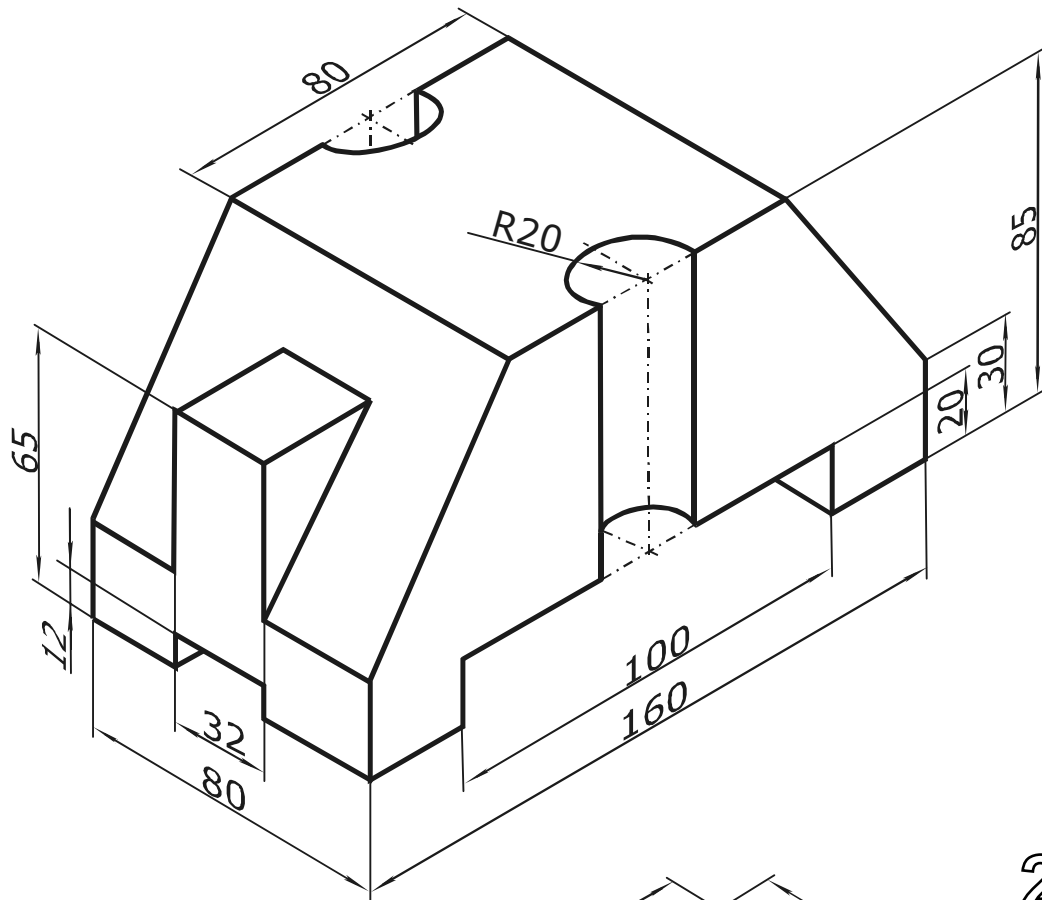


2T.22

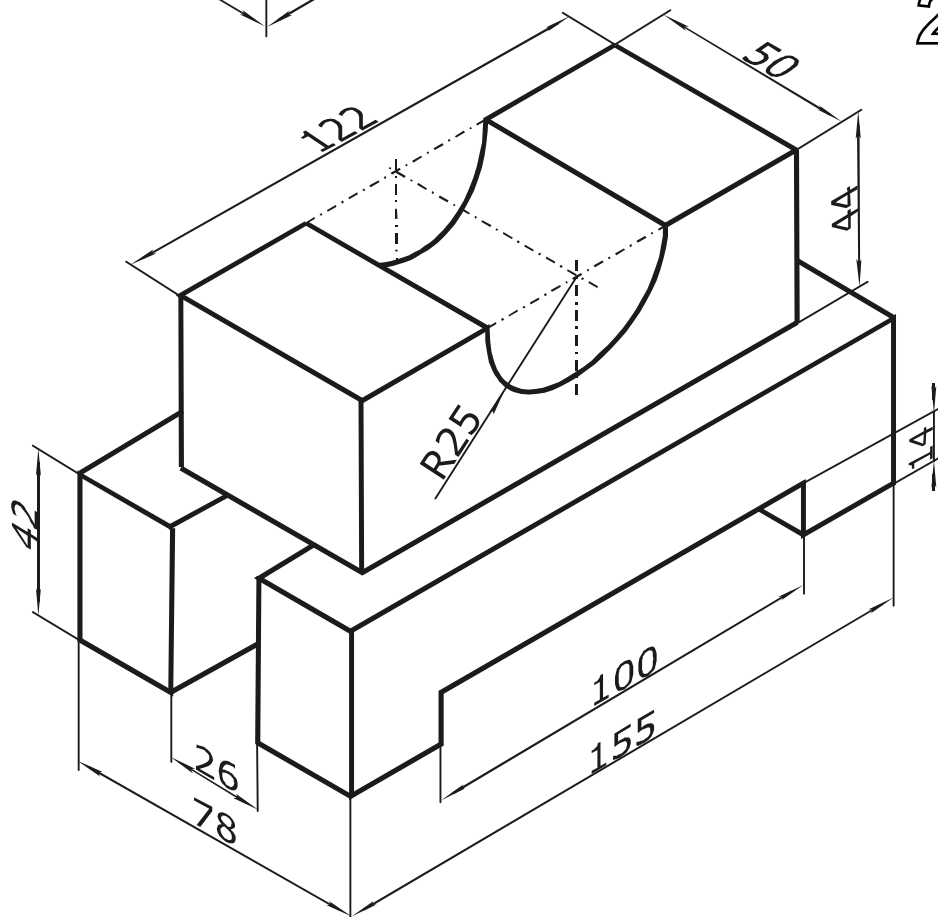




2T.23

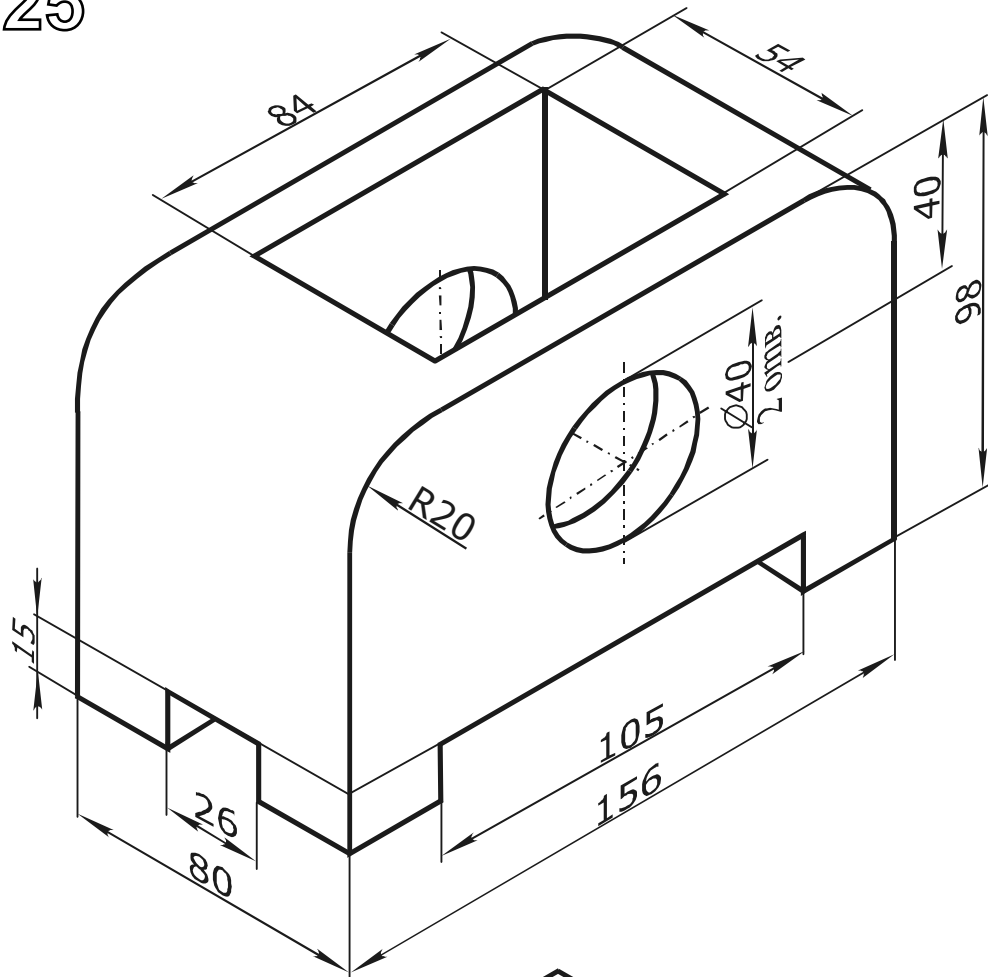


2T.24

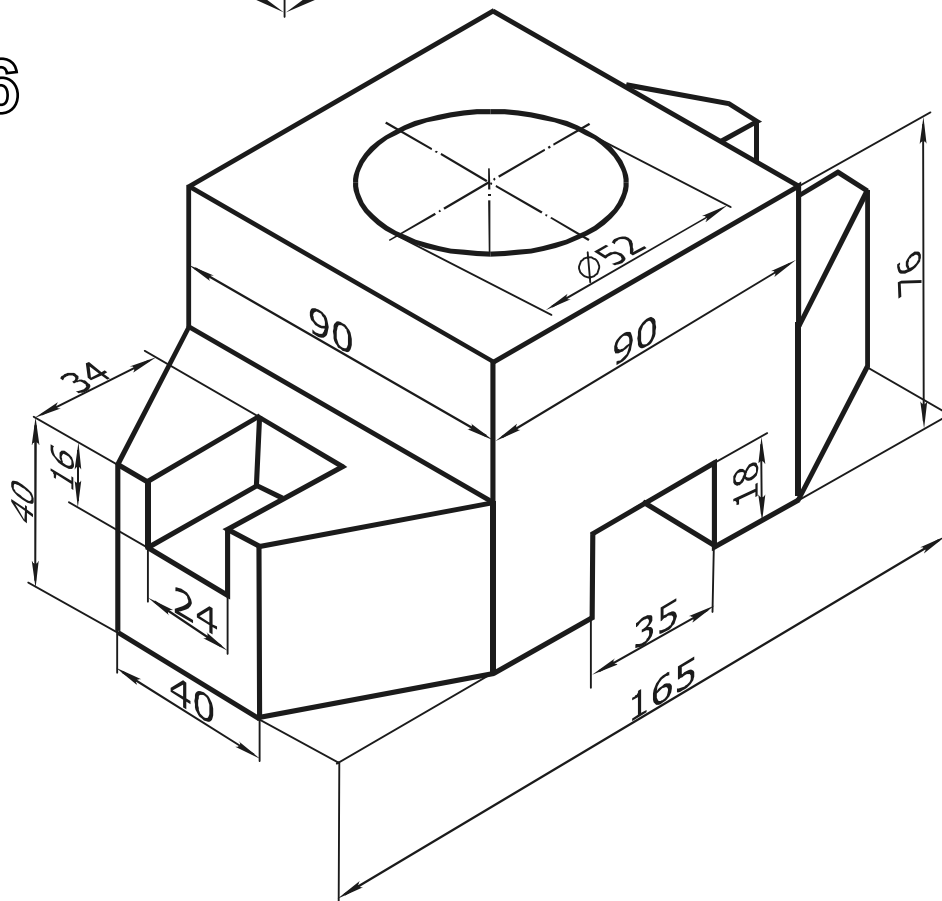




2T.25

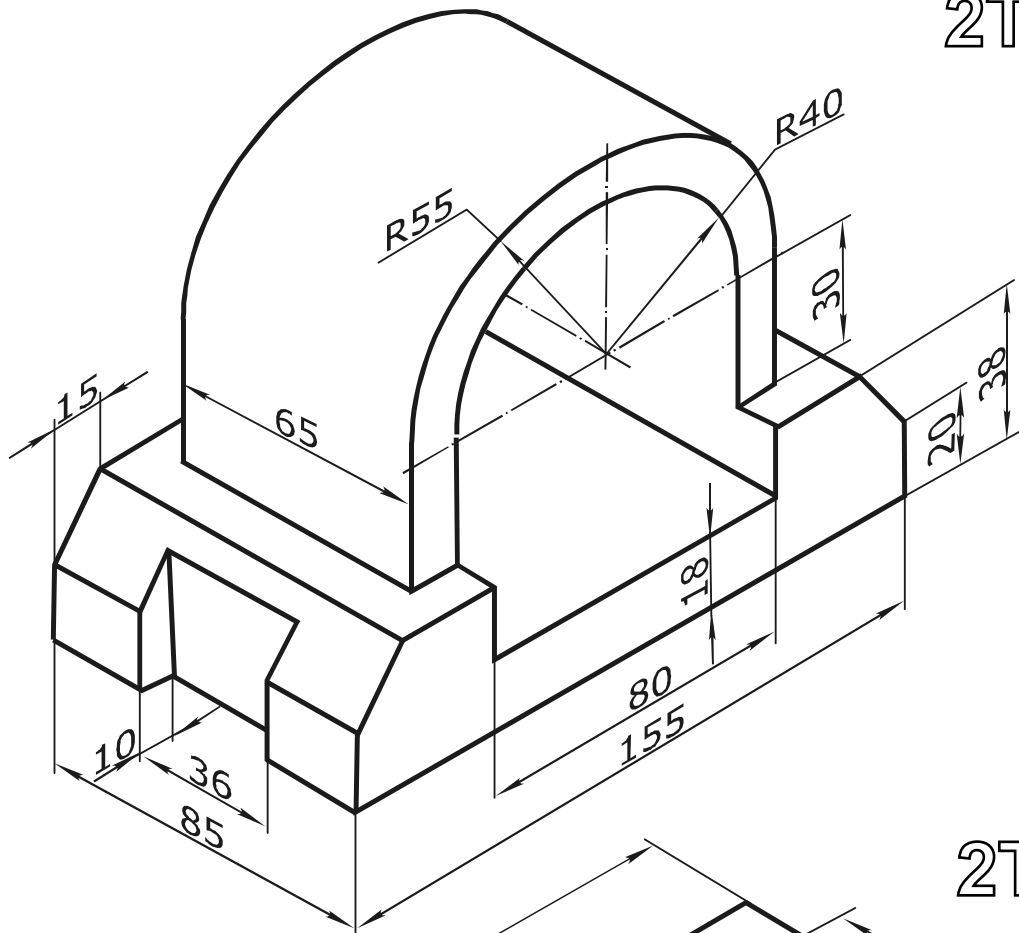


2T.26

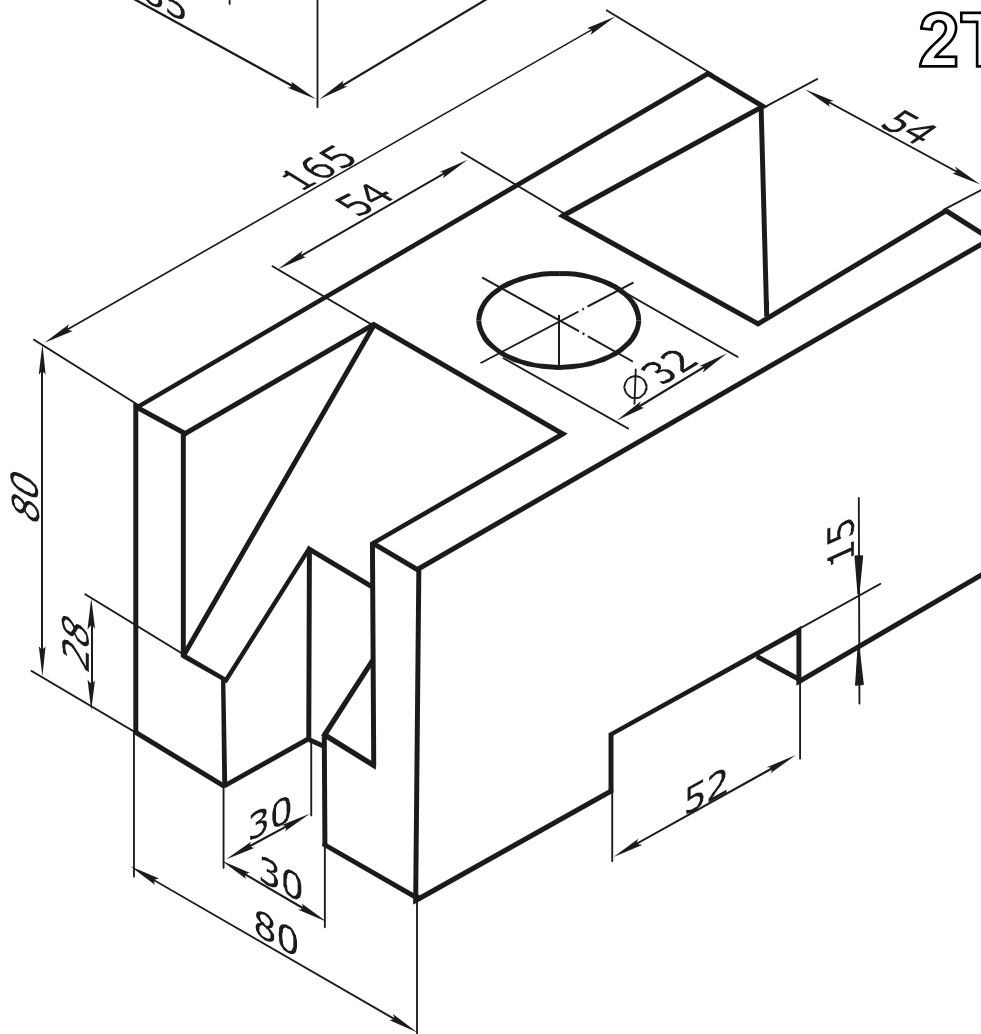




2T.27

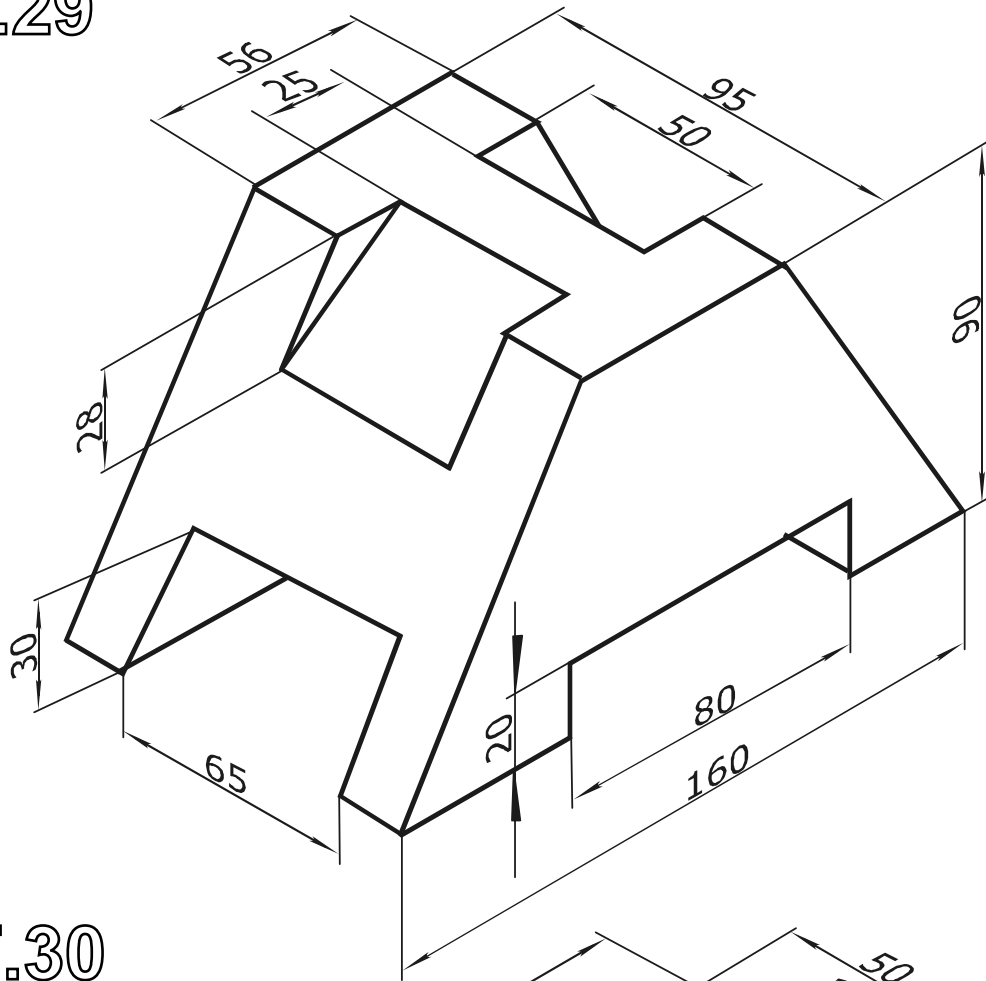


2T.28

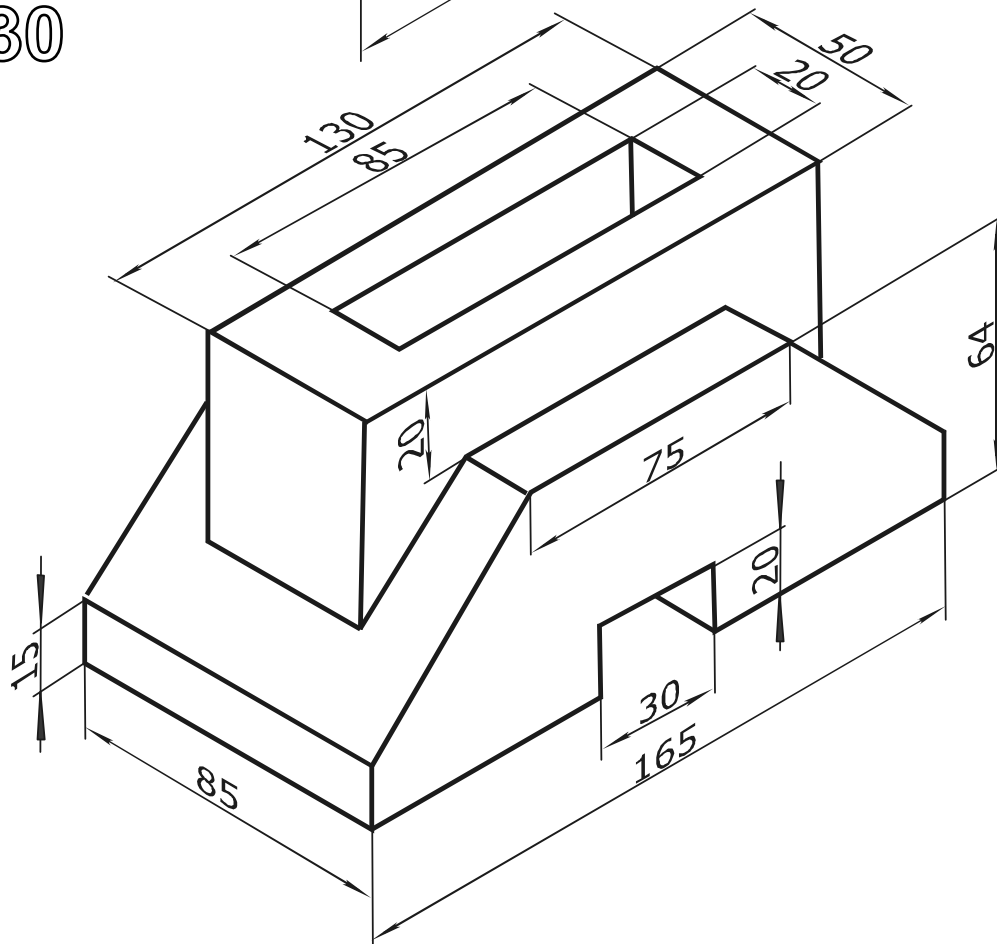




2T.29

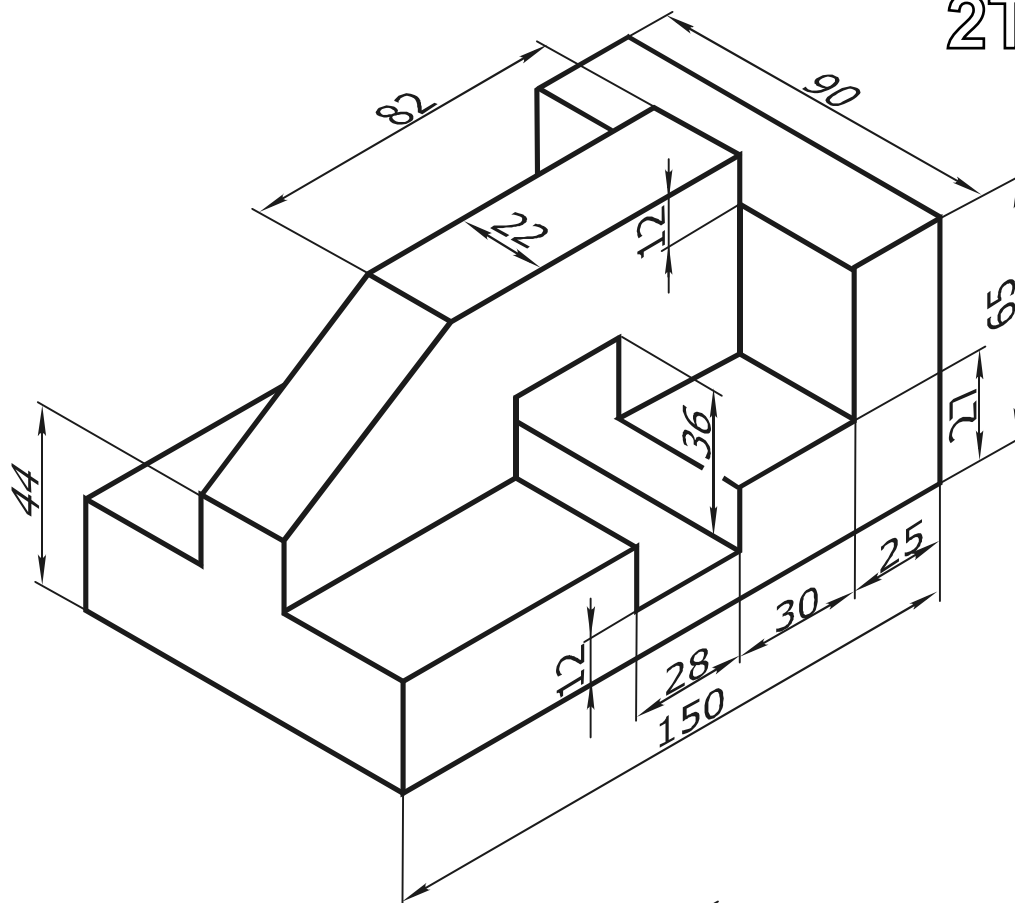


2T.30

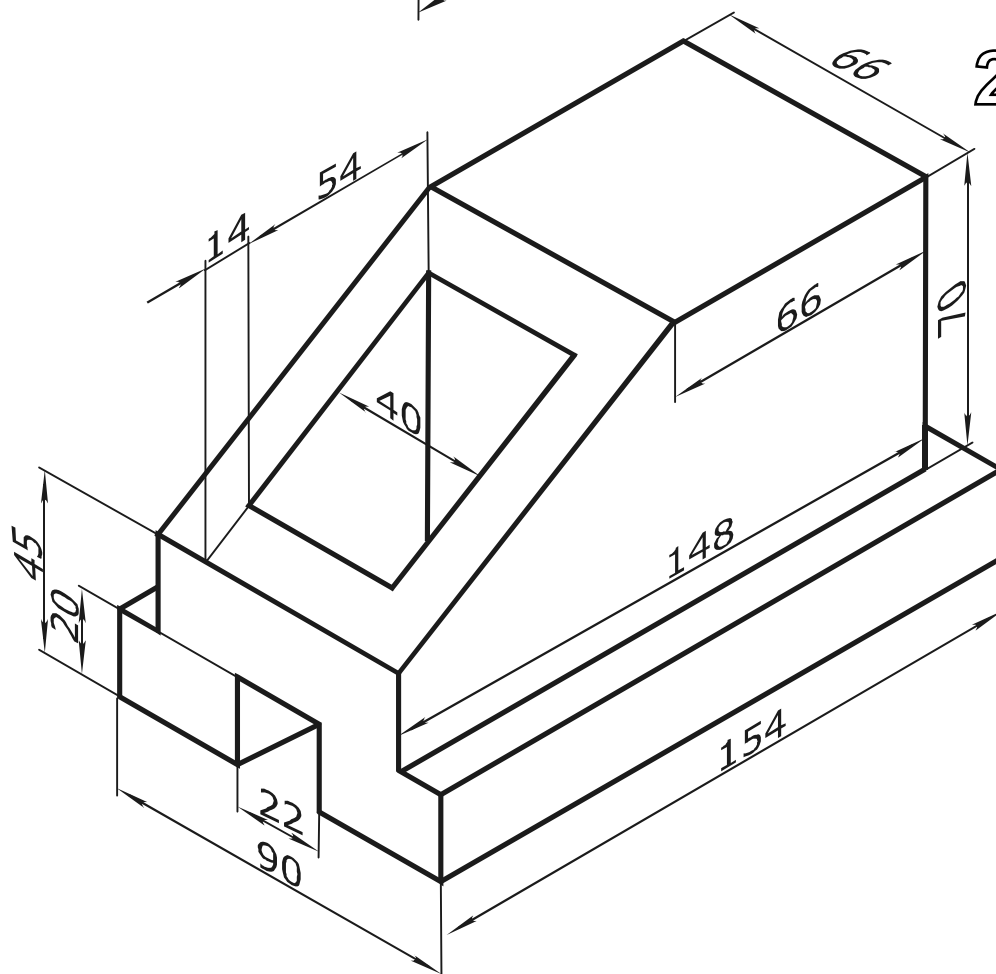




2T.31

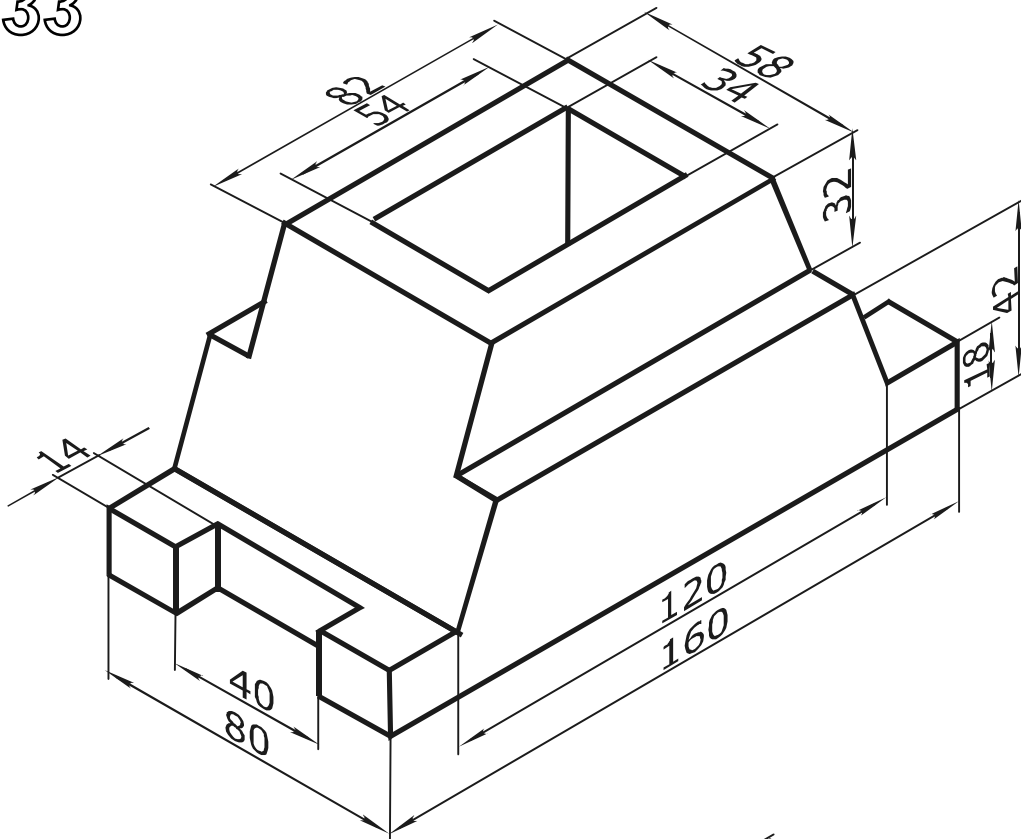


2T.32

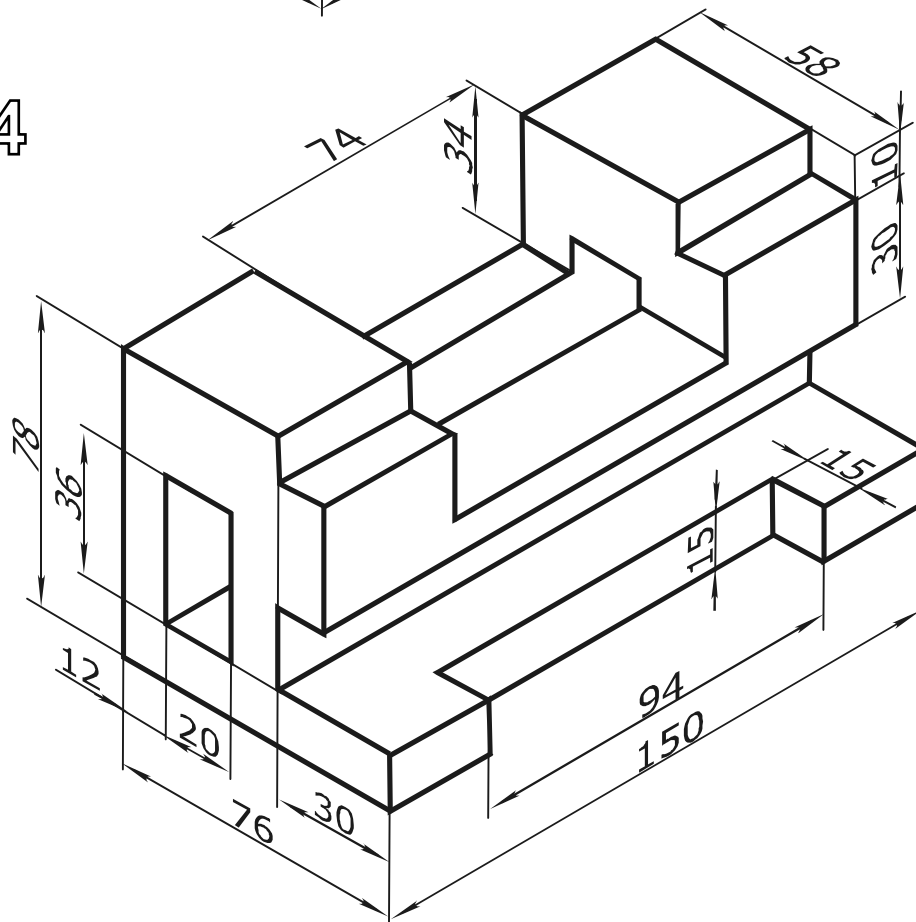




2T.33



2T.34



Isometric drawing of a mechanical part. The part is a rectangular block with a central circular hole. The dimensions are as follows:

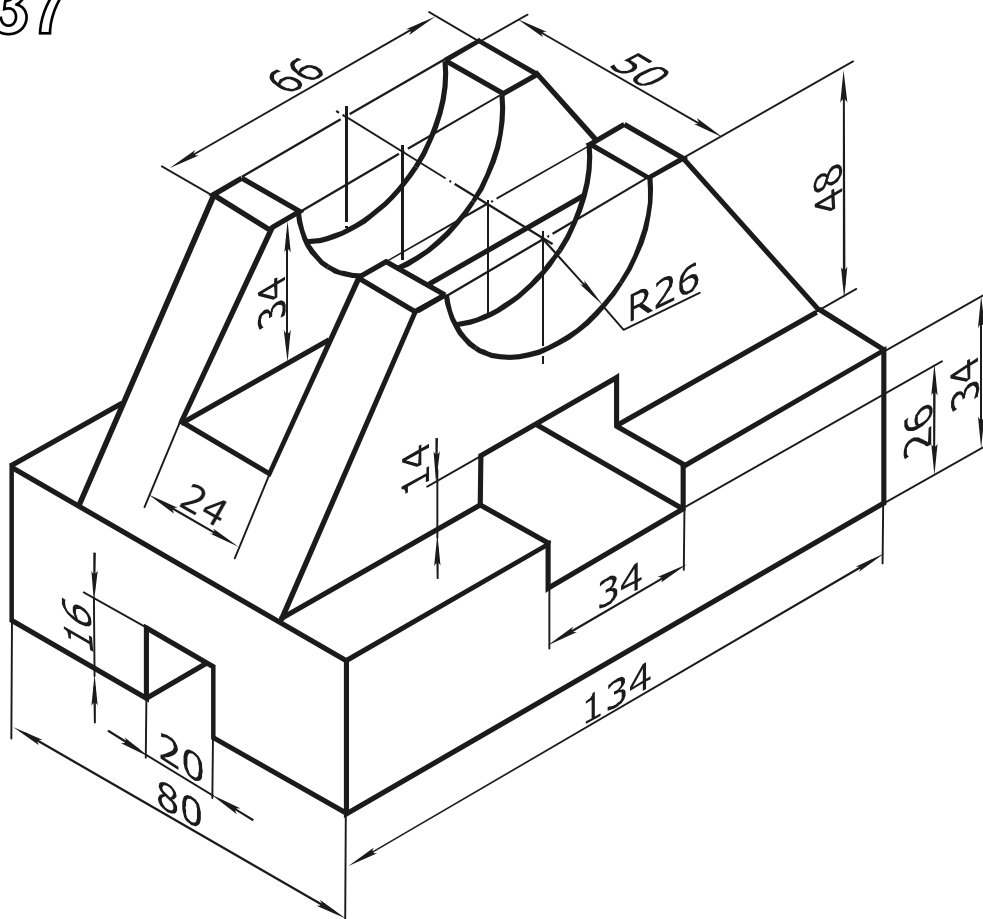
- Overall length: 165
- Overall width: 134
- Overall height: 80
- Distance from front face to start of hole: 96
- Distance from back face to end of hole: 22
- Distance from top face to start of hole: 15
- Distance from bottom face to end of hole: 28
- Radius of the hole: $R40$
- Inner diameter of the hole: $\phi 78$
- Outer diameter of the hole: $\phi 46$
- Distance from center of hole to front face: 40
- Distance from center of hole to back face: 18
- Distance from center of hole to top face: 34
- Distance from center of hole to bottom face: 22

Isometric drawing of a mechanical part with the following dimensions:

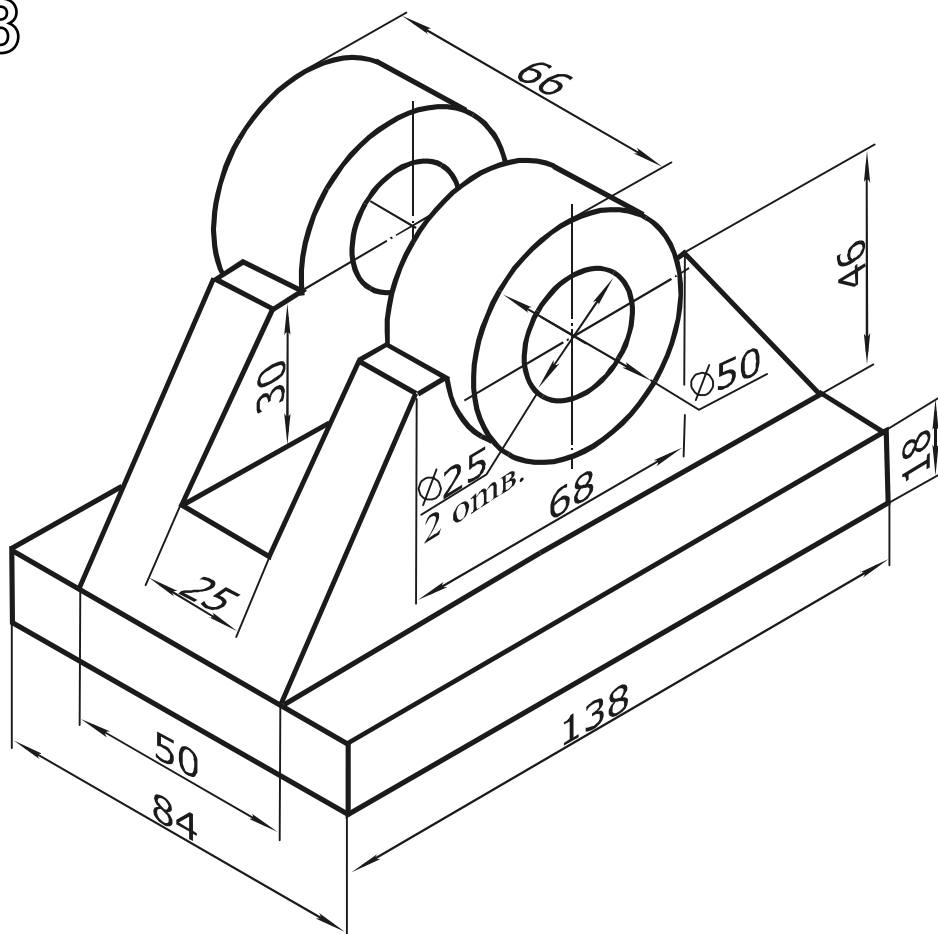
- Overall length: 150
- Overall width: 66
- Overall height: 110
- Top surface width: 90
- Top surface length: 50
- Top surface thickness: 12
- Top surface hole diameter: $\varnothing 36$
- Top surface hole position: 16 from the front edge
- Front face hole diameter: $\varnothing 20$
- Front face hole position: R20 from the left edge
- Front face thickness: 16



2T.37

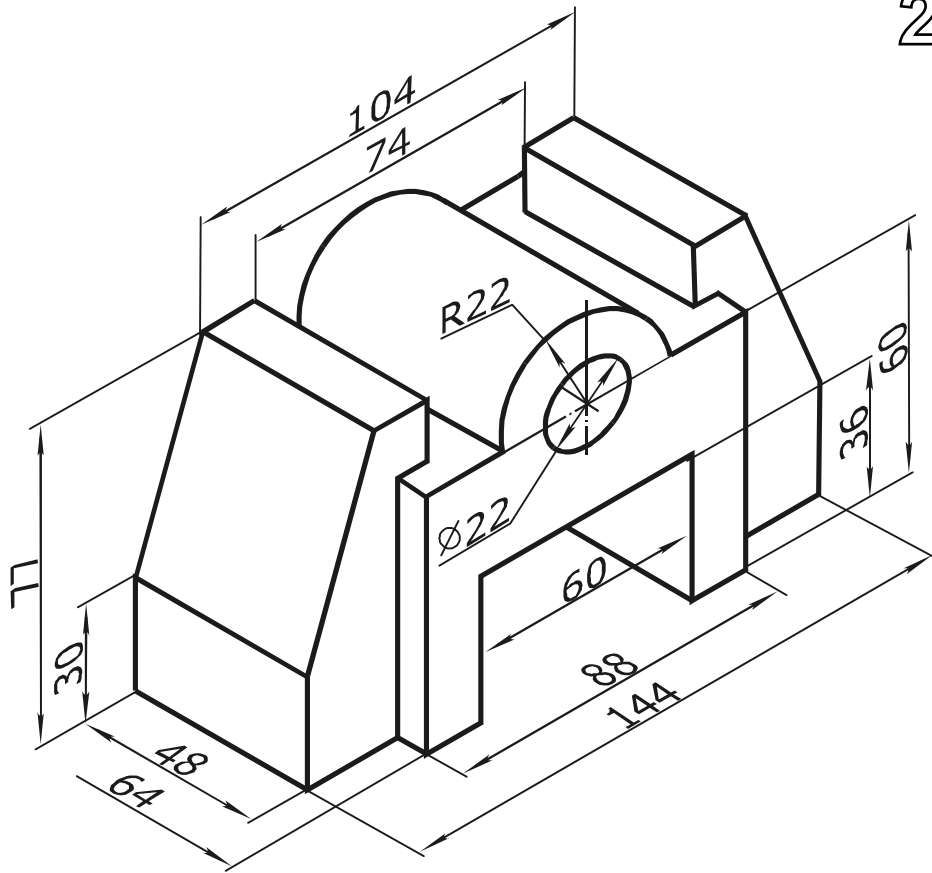


2T.38

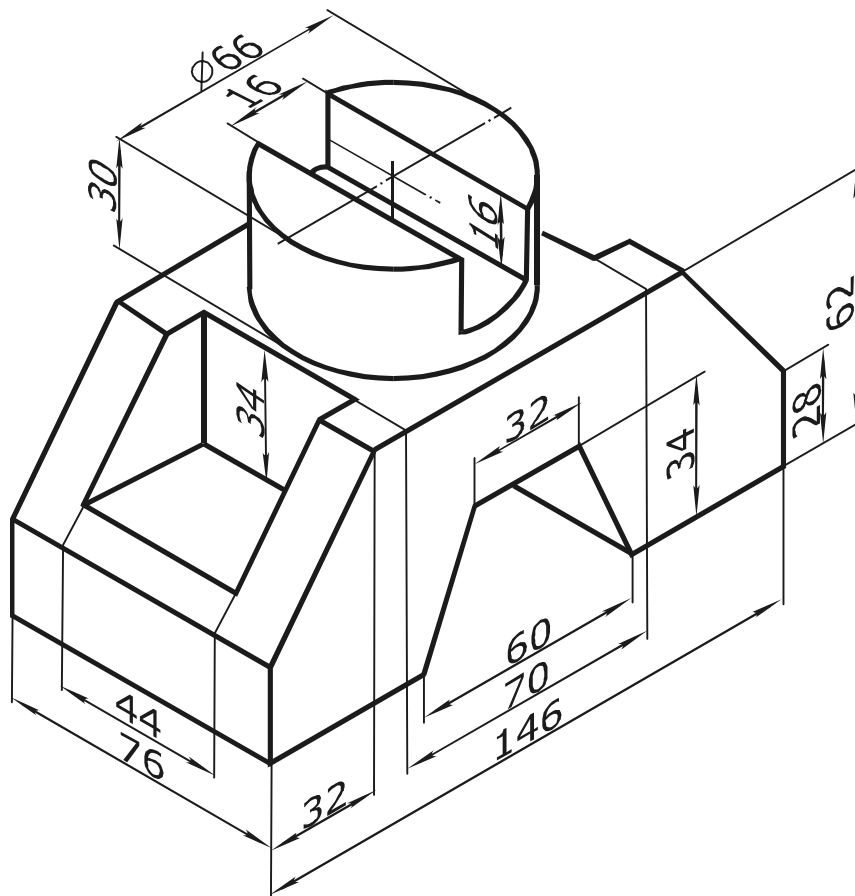




2T.39



2T.40



Isometric drawing of a mechanical part with the following dimensions:

- Overall width: 120
- Overall height: 60
- Base width (left): 75
- Base width (right): 36
- Base thickness: 20
- Inner width (left): 60
- Inner width (right): 38
- Inner height (left): 26
- Inner height (right): 15
- Top width (left): 88
- Top width (right): $\phi 36$
- Top radius (right): R38

Isometric drawing of a mechanical part. The part consists of a base plate with a central rectangular cutout and a cylindrical feature on top. The base plate has a total width of 160 and a total length of 92. The central cutout has a width of 60 and a depth of 28. The cylindrical feature has a diameter of $\phi 86$ and a height of 58. The base plate has a thickness of 18. The cylindrical feature has a height of 14. The base plate has a width of 20 on the right side. The base plate has a width of 27 on the left side. The base plate has a width of 30 on the left side. The base plate has a width of 20 on the right side. The base plate has a width of 27 on the left side. The base plate has a width of 30 on the left side.

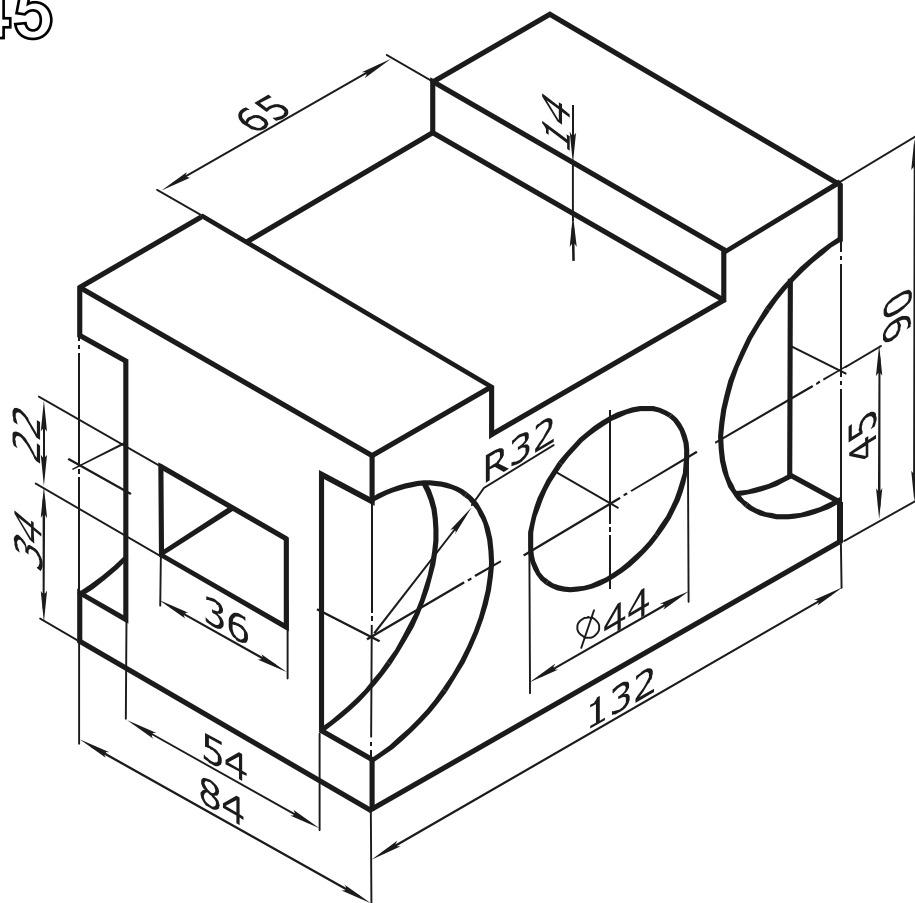
Isometric view of a mechanical part with the following dimensions:

- Overall width: 68
- Overall depth: 80
- Overall height: 80
- Top surface width: 46
- Top surface depth: 24
- Top surface height: 15
- Top surface width: 38
- Top surface depth: 20
- Top surface height: 36
- Top surface width: 26
- Top surface depth: 135
- Top surface height: 22
- Radius: R18

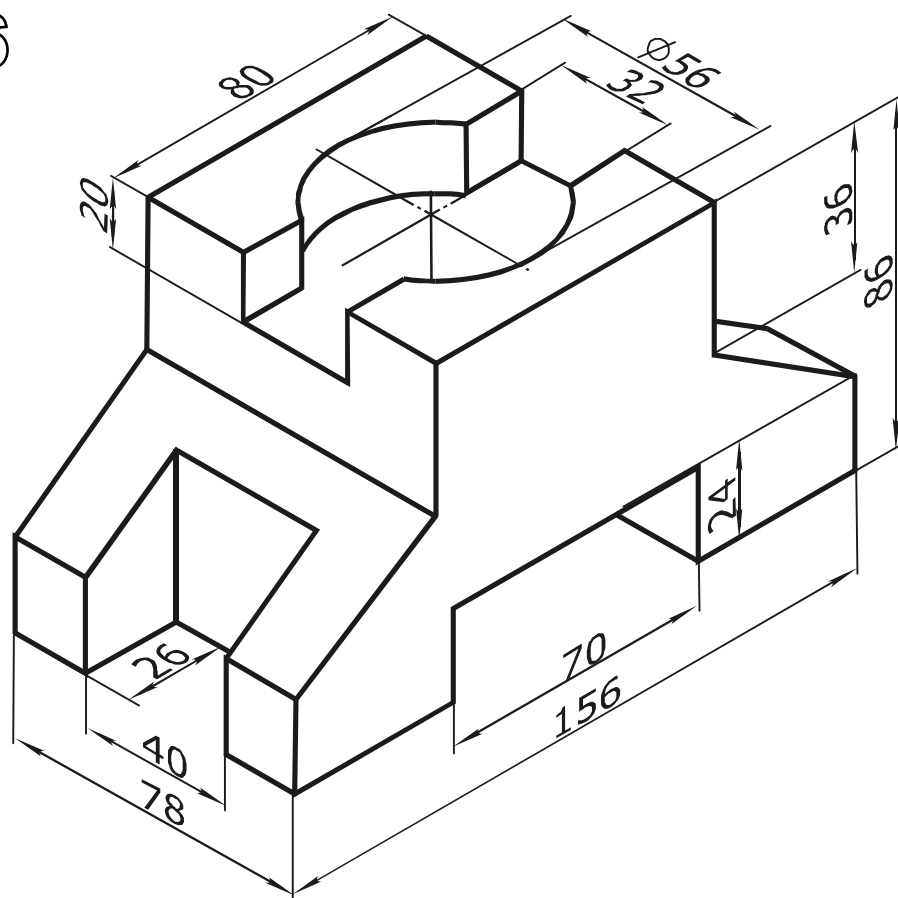
Isometric view of a mechanical part. Dimensions include: 78, 34, 40, 162, 68, 30, 96, 28, 32, R14, 18, 22, $\phi 58$, $\phi 35$, and 25.



2T.45

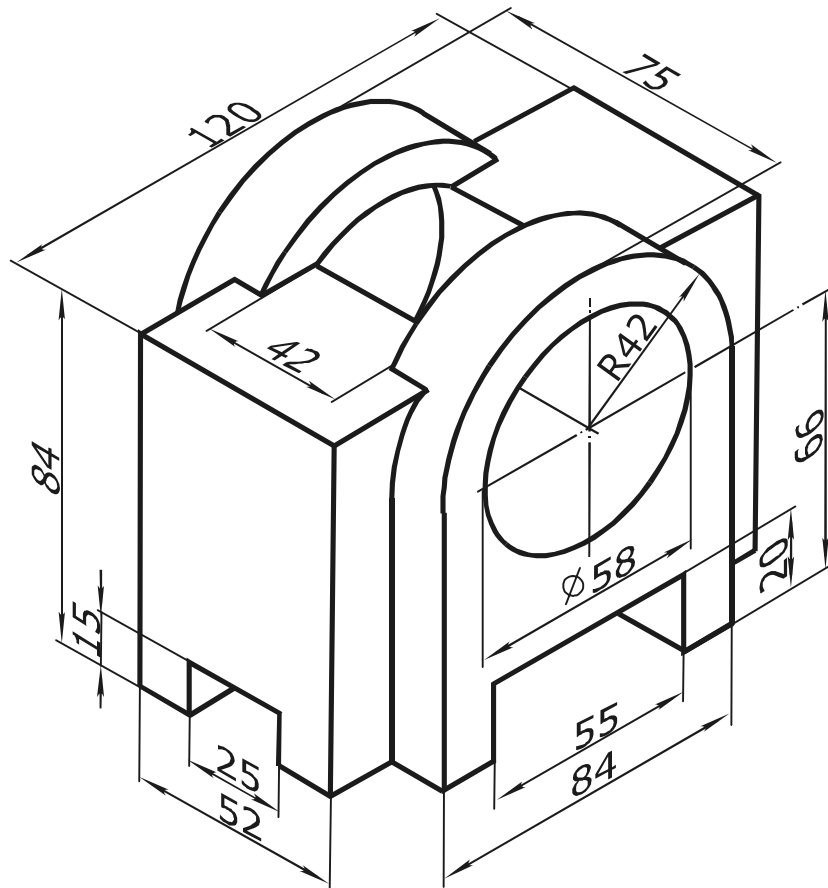


2T.46

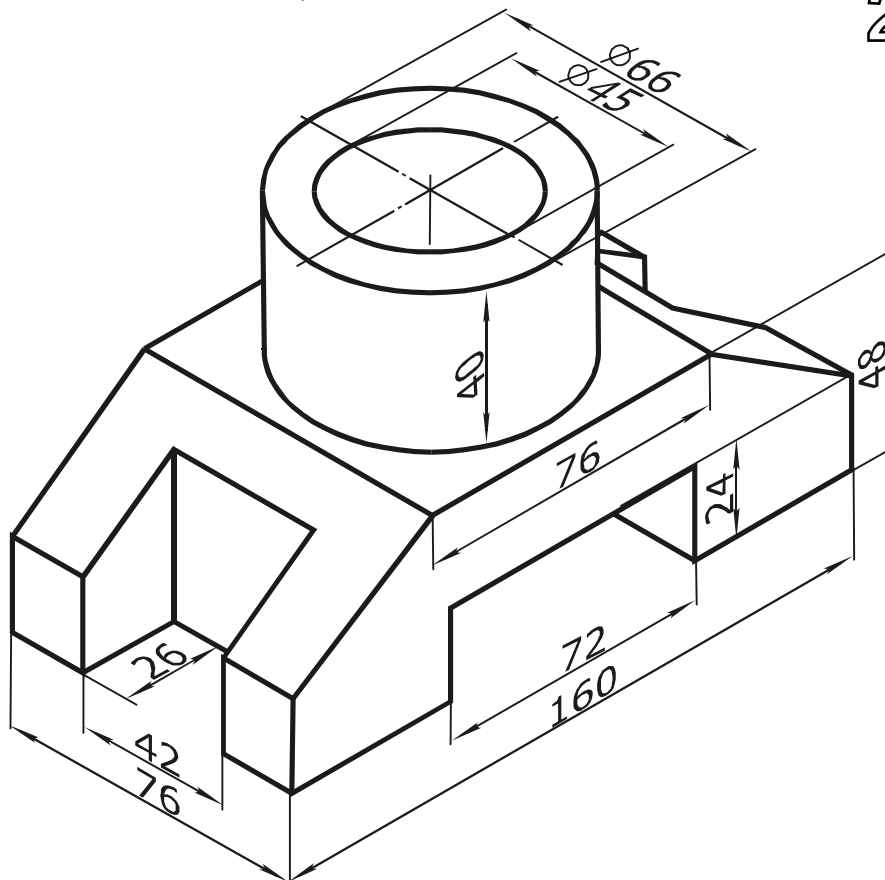




2T.47

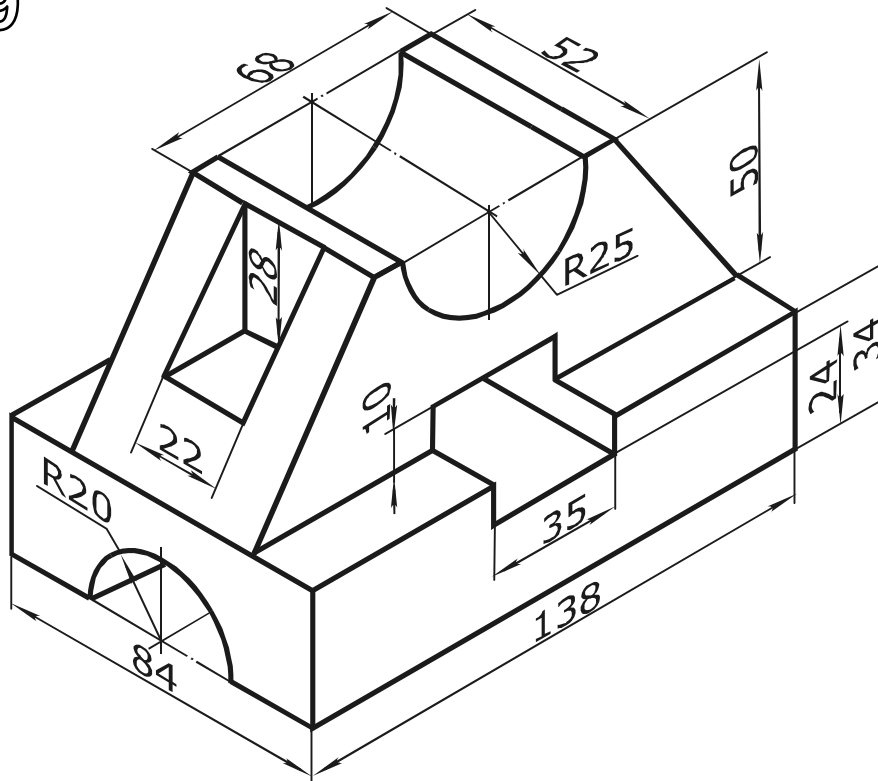


2T.48

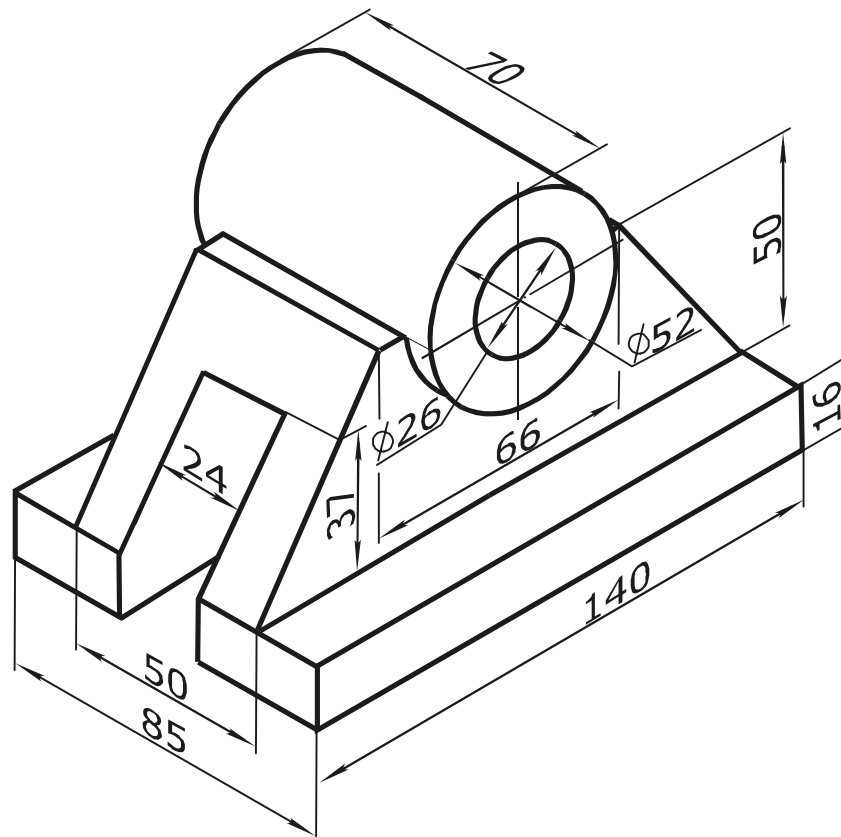




2T.49

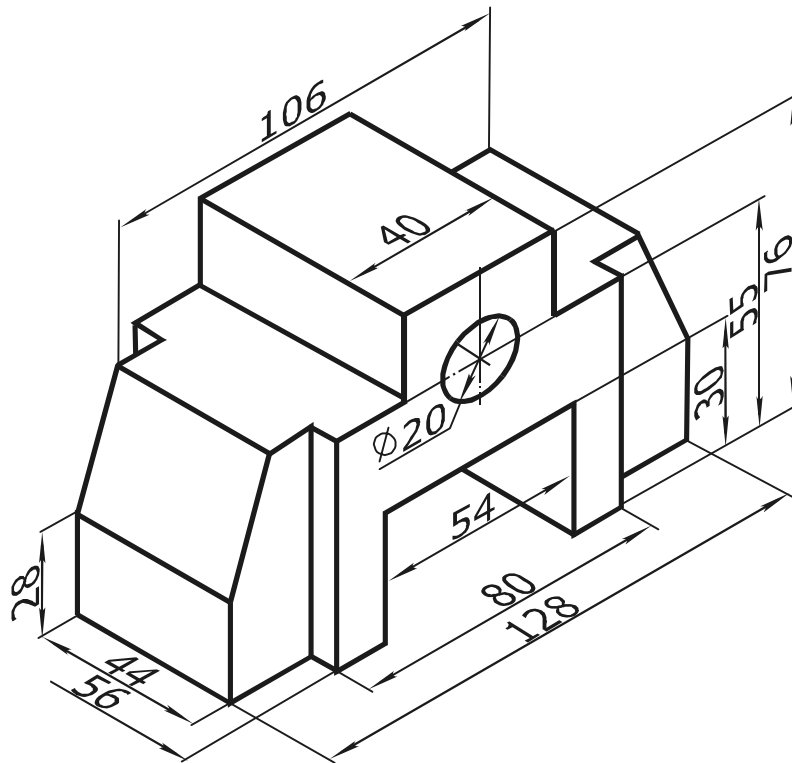


2T.50

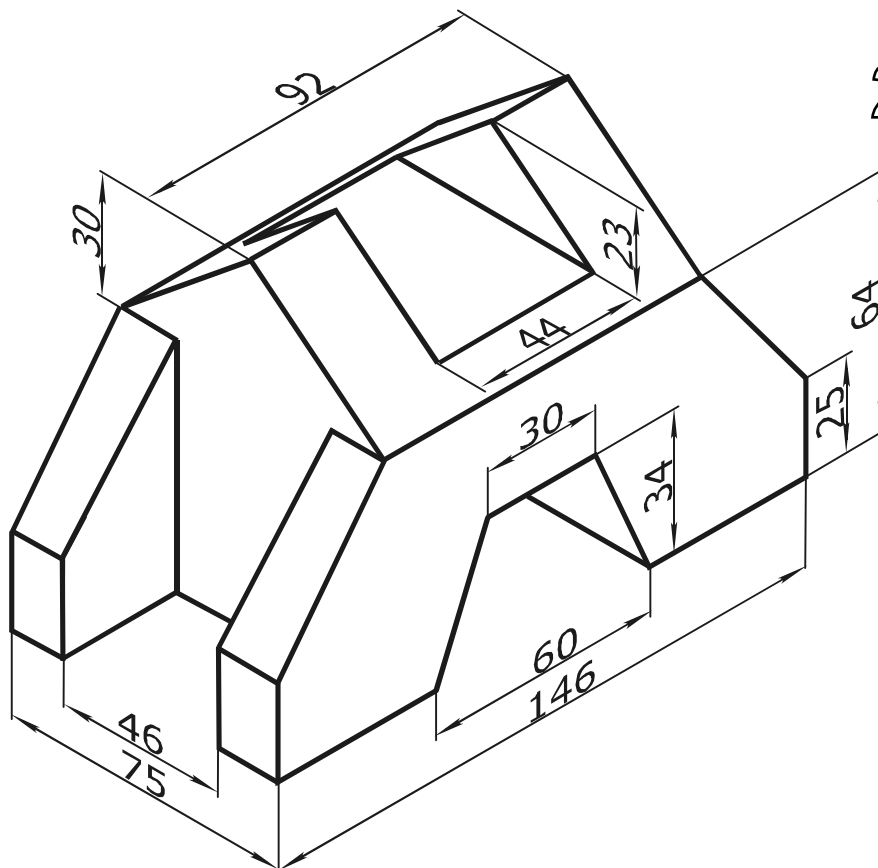




2T.51

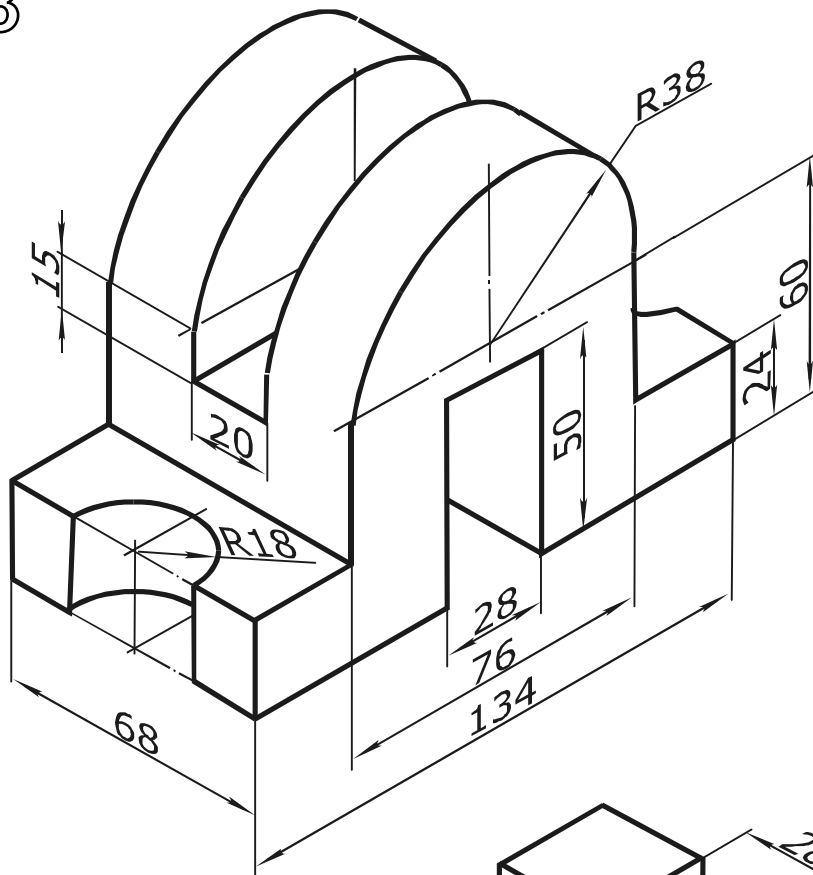


2T.52

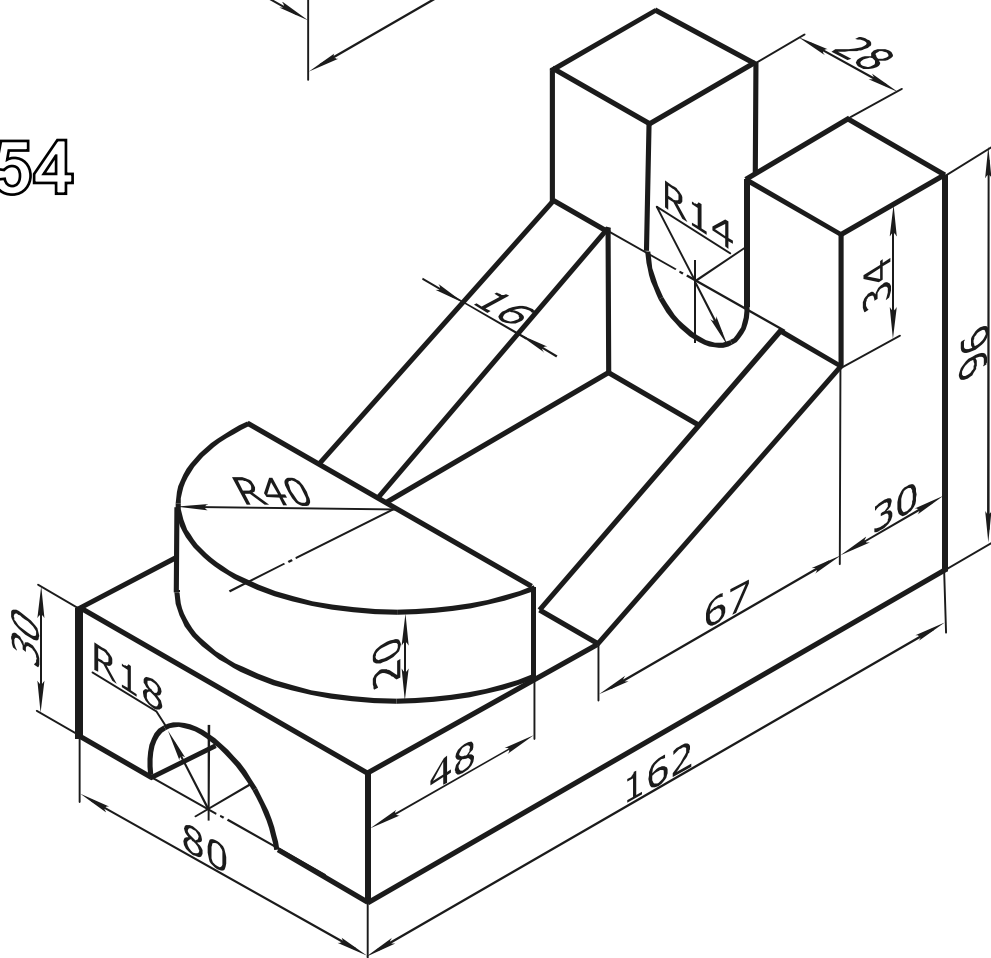




2T.53



2T.54

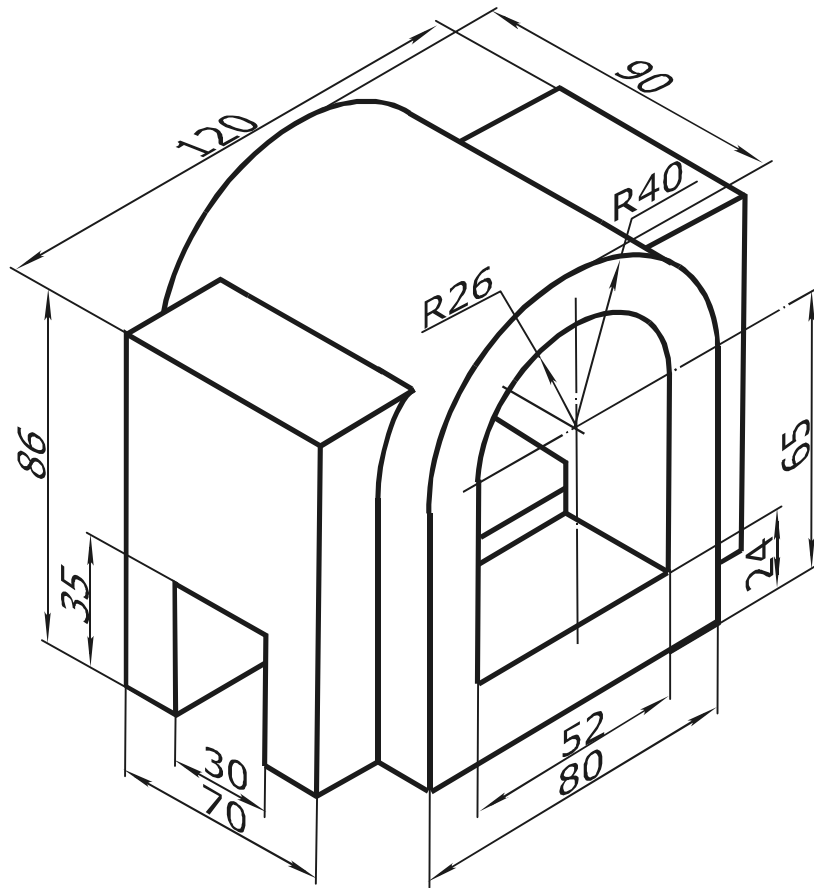


Isometric view of a mechanical part. Dimensions include: 64, 14, 90, 45, 132, 32, R16, R35, 35, 56, 85, 33, 24. Labels include: R35, R16.

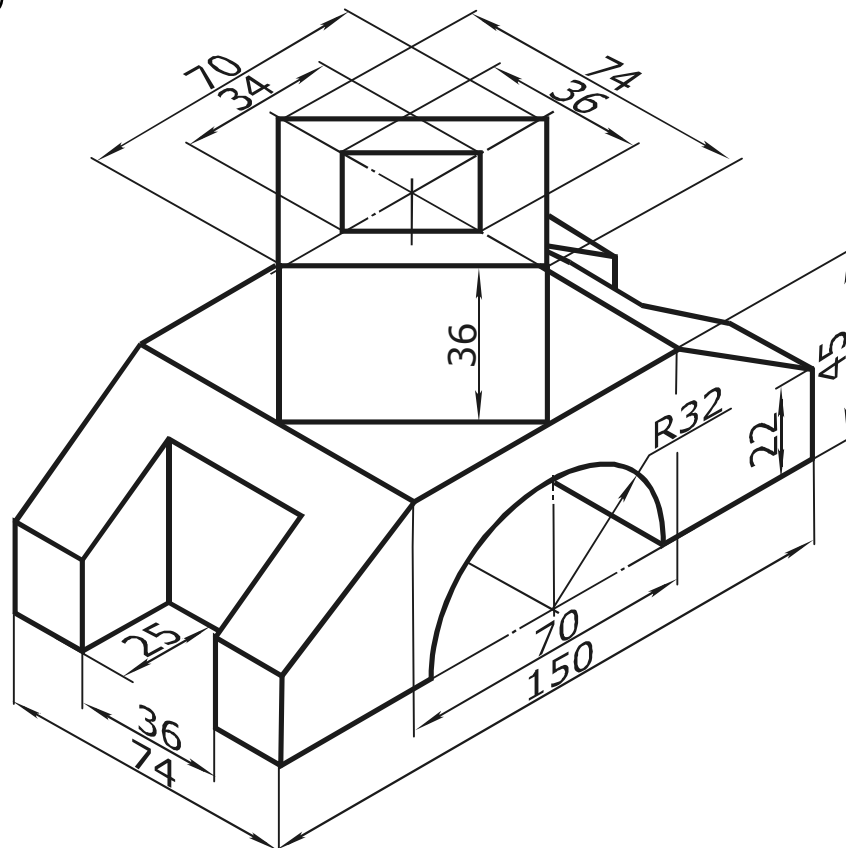
Isometric view of a mechanical part. Dimensions include: 16, 78, R26, 60, 30, 25, 35, 80, 66, 158, 26, 40, 80, and 25.



2T.57

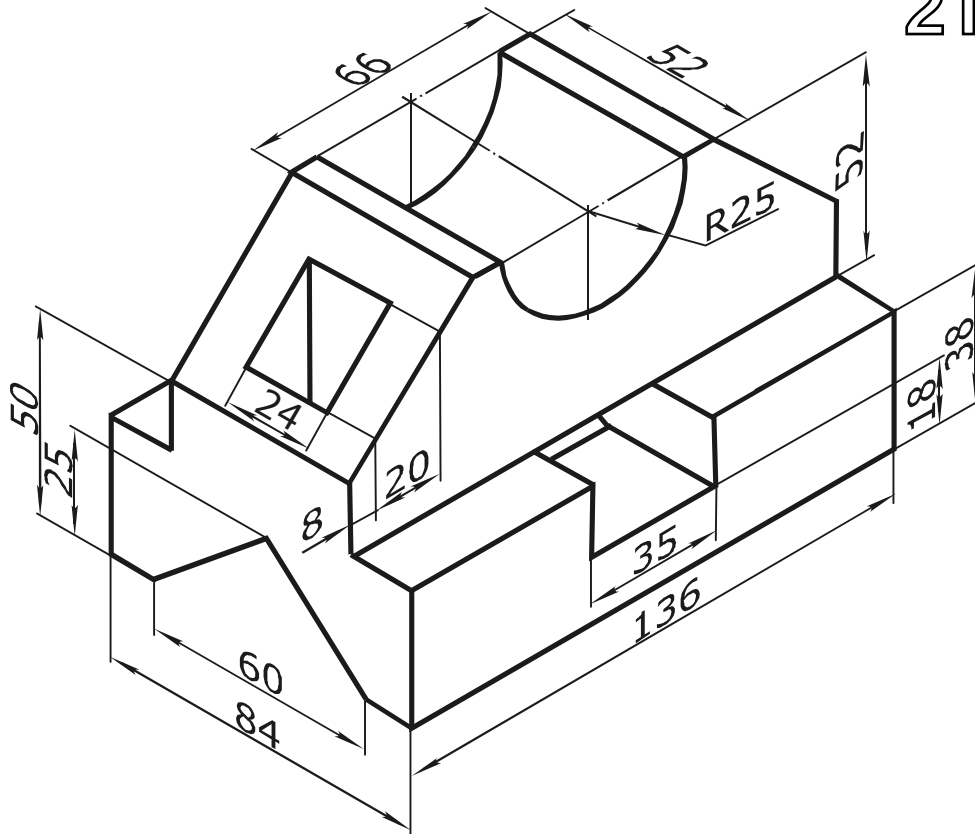


2T.58

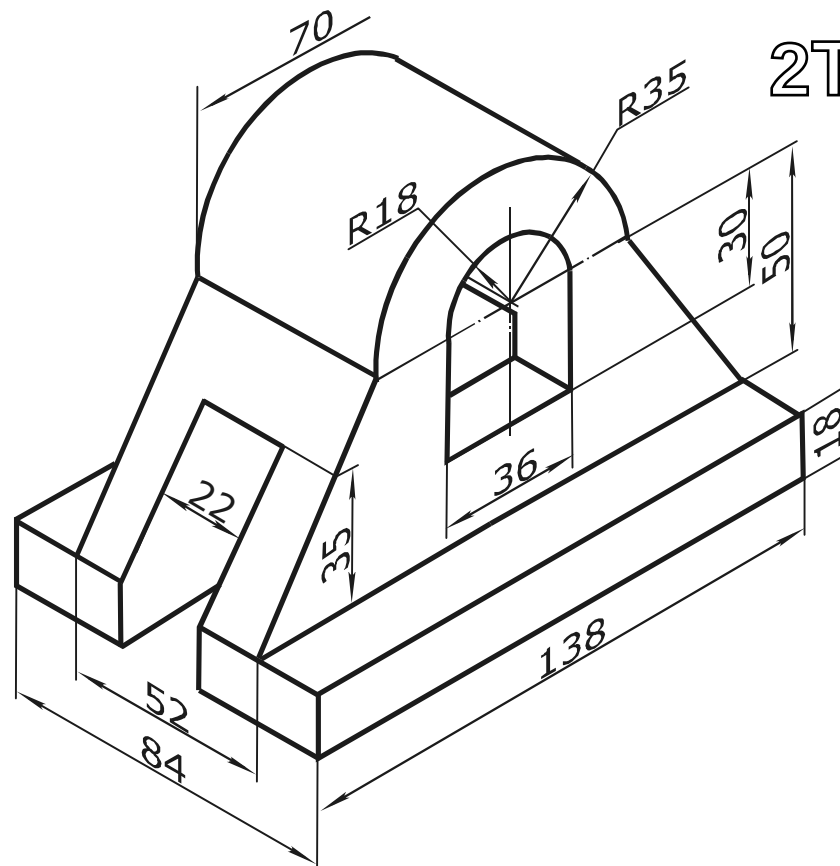




2T.59



2T.60

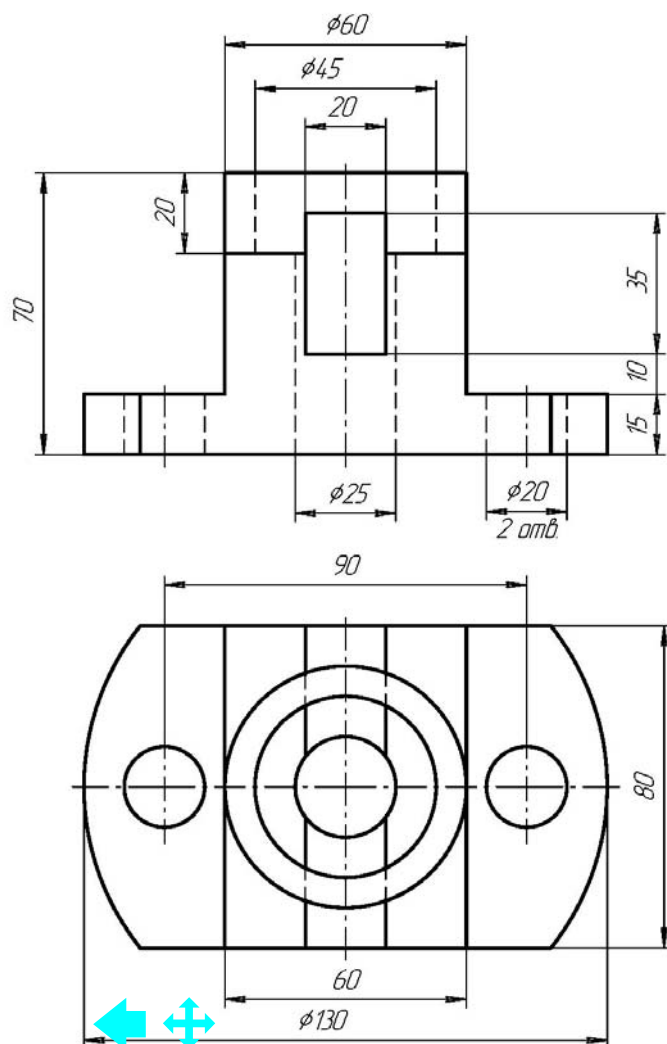




3Т. ВЫПОЛНЕНИЕ ПРОСТЫХ РАЗРЕЗОВ И ПОСТРОЕНИЕ АКСОНОМЕТРИЧЕСКОЙ ПРОЕКЦИИ (задания 3Т.01..3Т.60)

Условие каждого задания содержит два вида предмета - спереди (главный) и сверху. Указаны размеры предмета. Особенностью формы предметов в данном разделе является наличие двух взаимноперпендикулярных плоскостей симметрии - фронтальной и профильной (**рис. 6**).

Требуется начертить три вида предмета - спереди, сверху и слева, выполнить два обязательных простых разреза - фронтальный и профильный, применив условность о совмещении части вида и части соответствующего разреза на одном изображении.

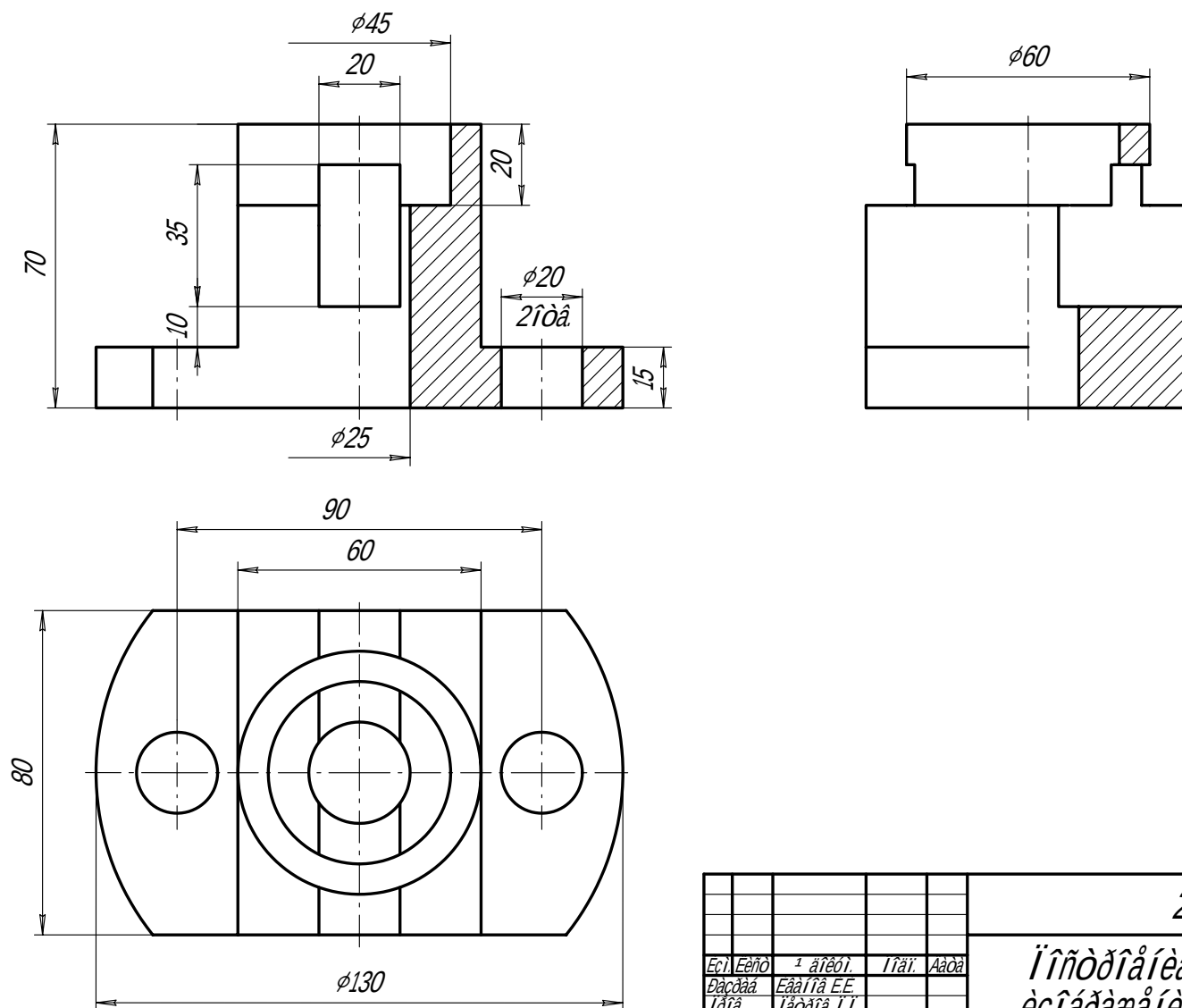


Форму отверстий, пазов и других элементов, не попавших в плоскости фронтального и профильного разрезов, рекомендуется показать с помощью местных разрезов или местных видов. Пример выполнения задания показан на **рис. 7**.

Требуется также построить аксонометрическую проекцию симметричного предмета - прямоугольную изометрию с четвертным вырезом, который образуется фронтальной и профильной плоскостями симметрии предмета.

Пример построения аксонометрического изображения предмета показан на **рис. 8**.

Рис. 6. Пример задания из раздела 3Т



20.61					
Εξ.	Εξο	1	αίεοι.	Τίτλ.	Ααοά
Δαοάα	Εααίττ	ΕΕ.			
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Είηοίαε

Οίδιαο Α3



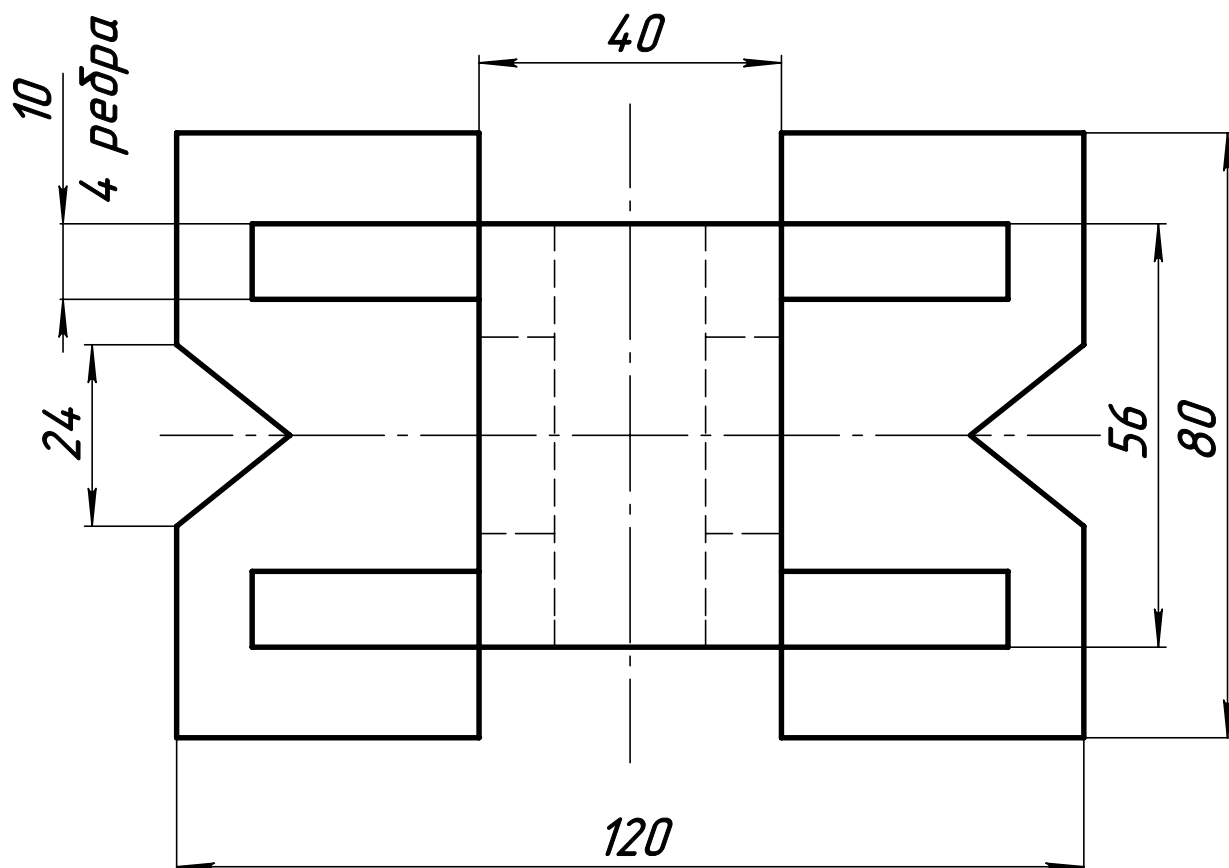
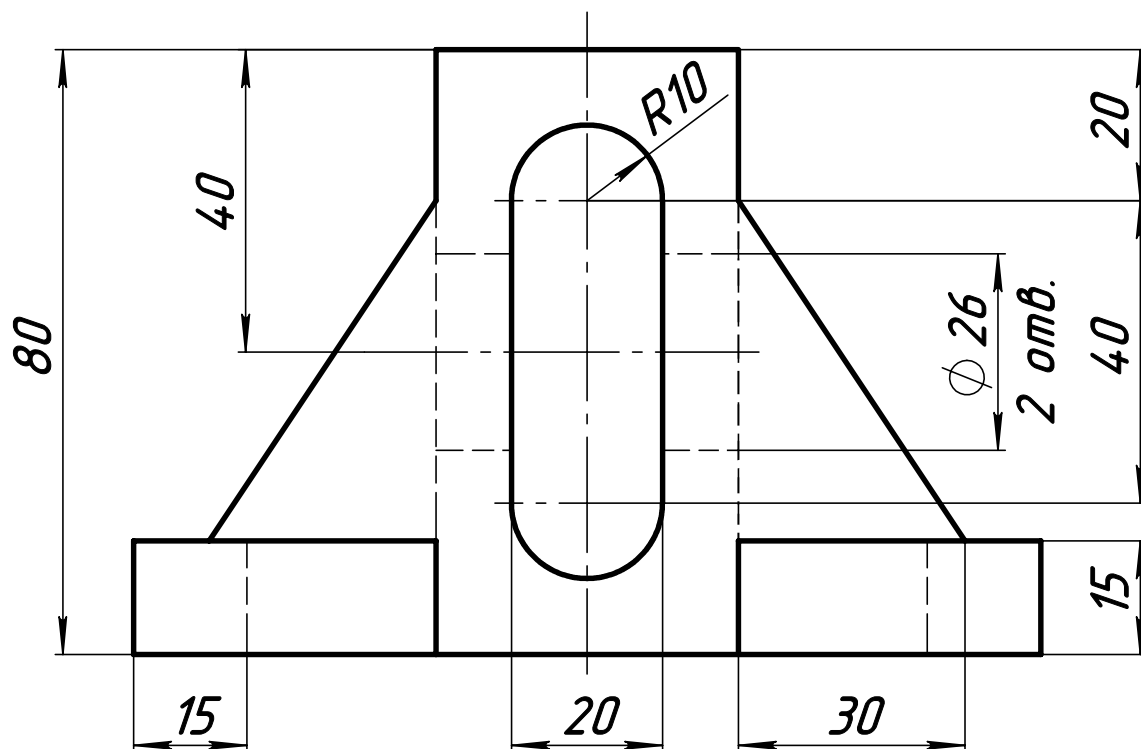
Рис. 7. Пример выполнения задания из раздела 3Т



Рис. 8. Пример построения аксонометрической проекции

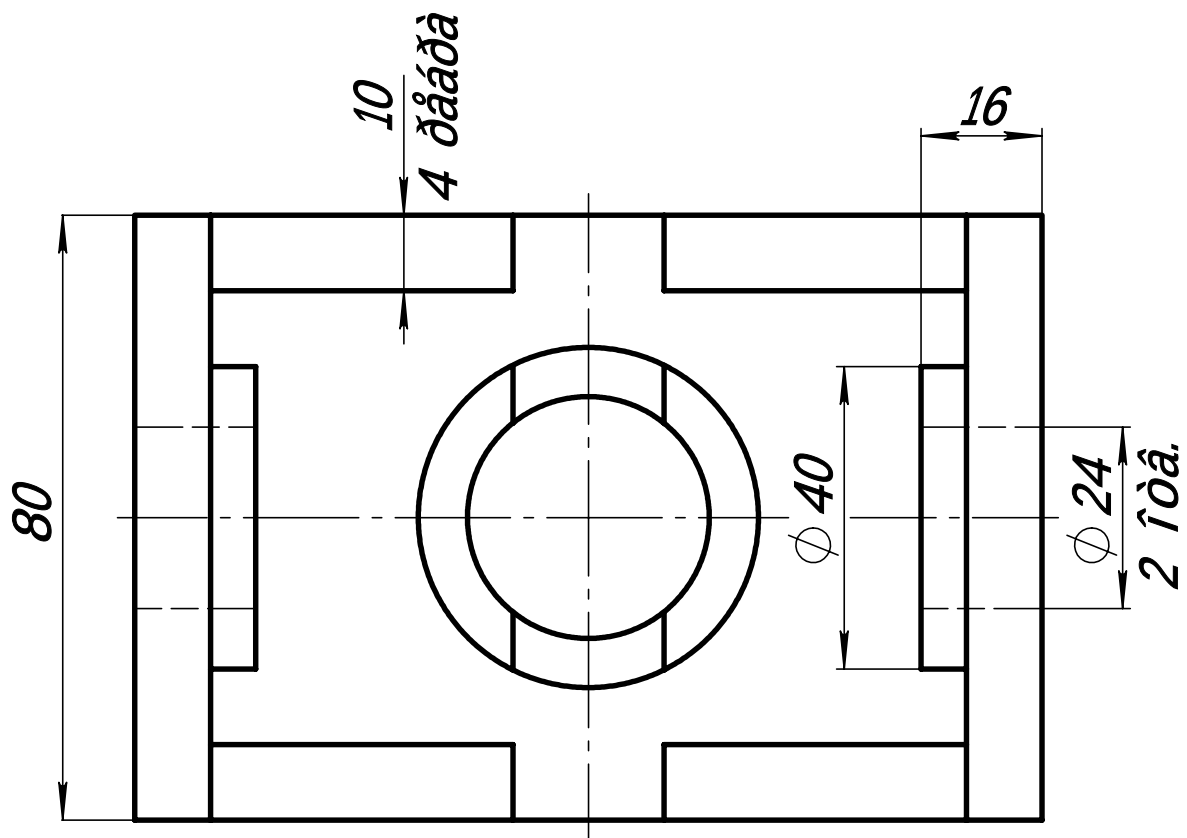
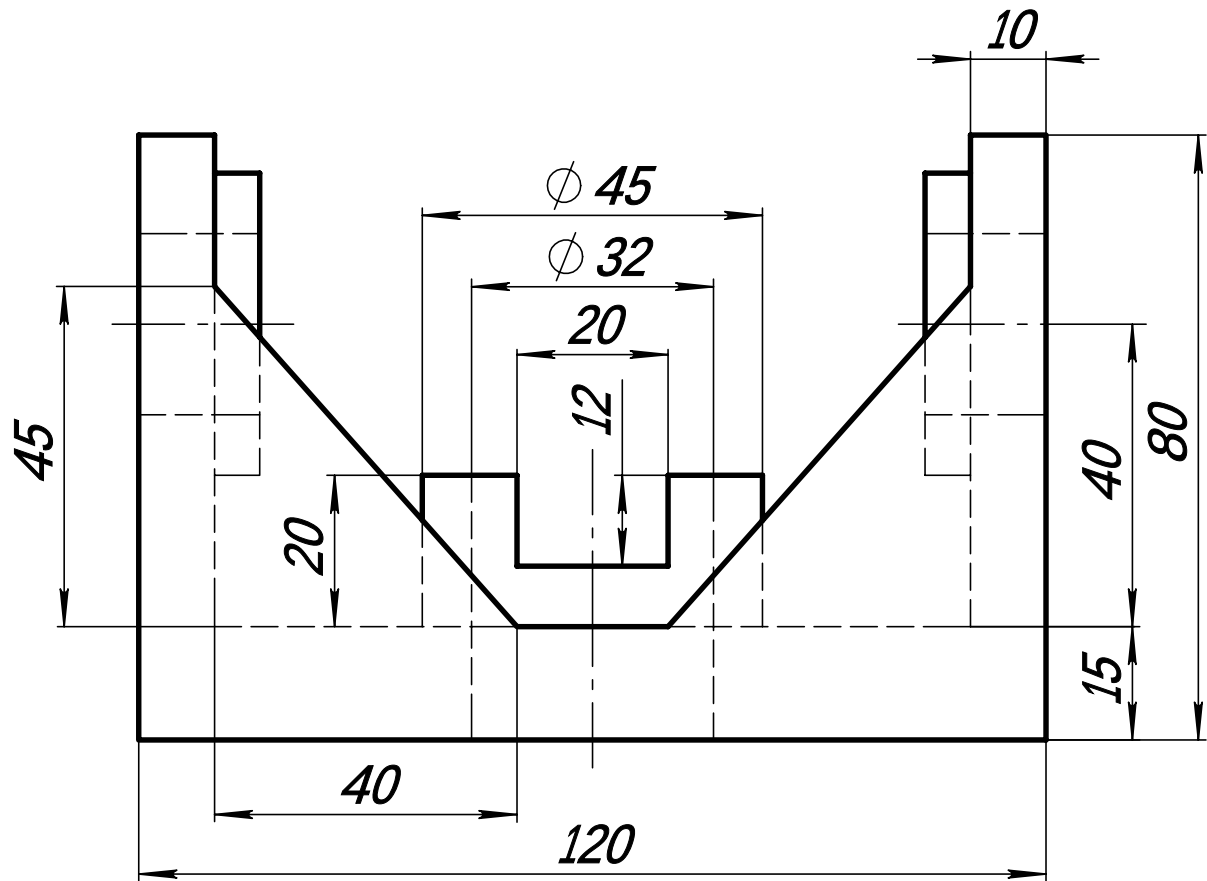


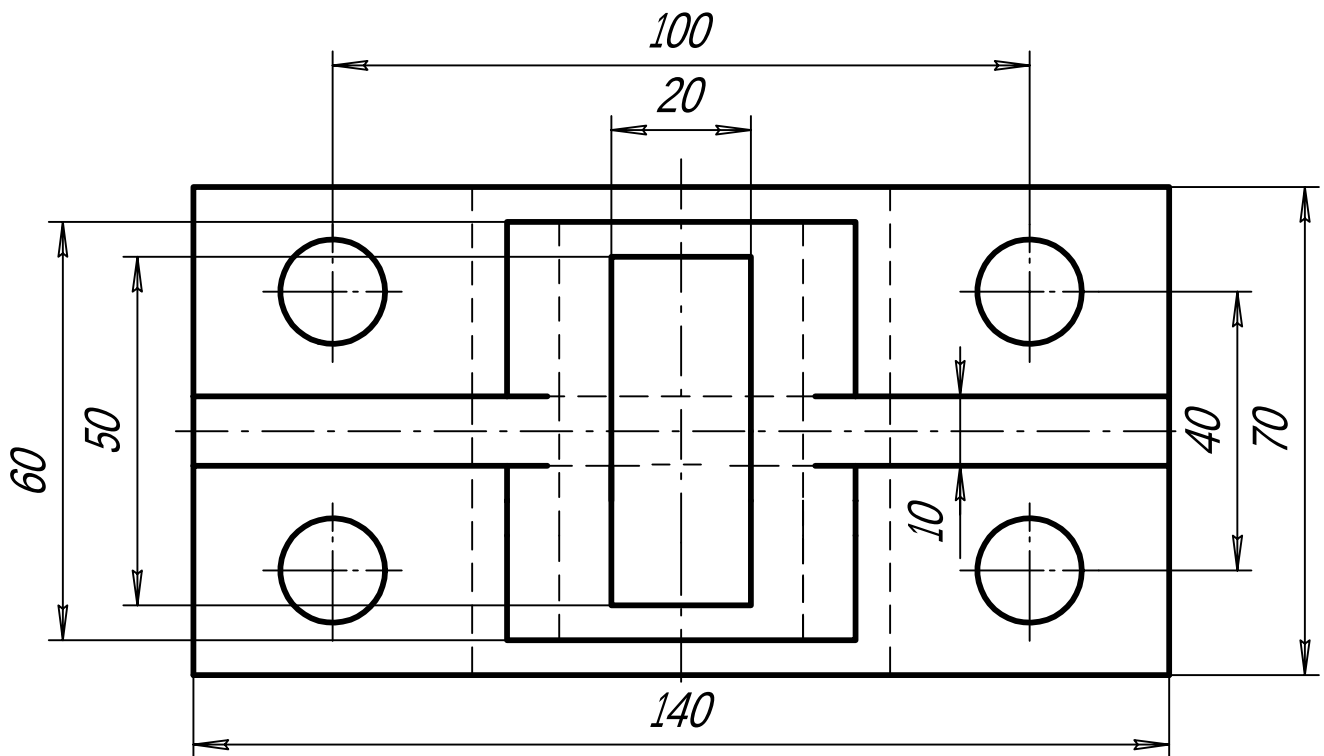
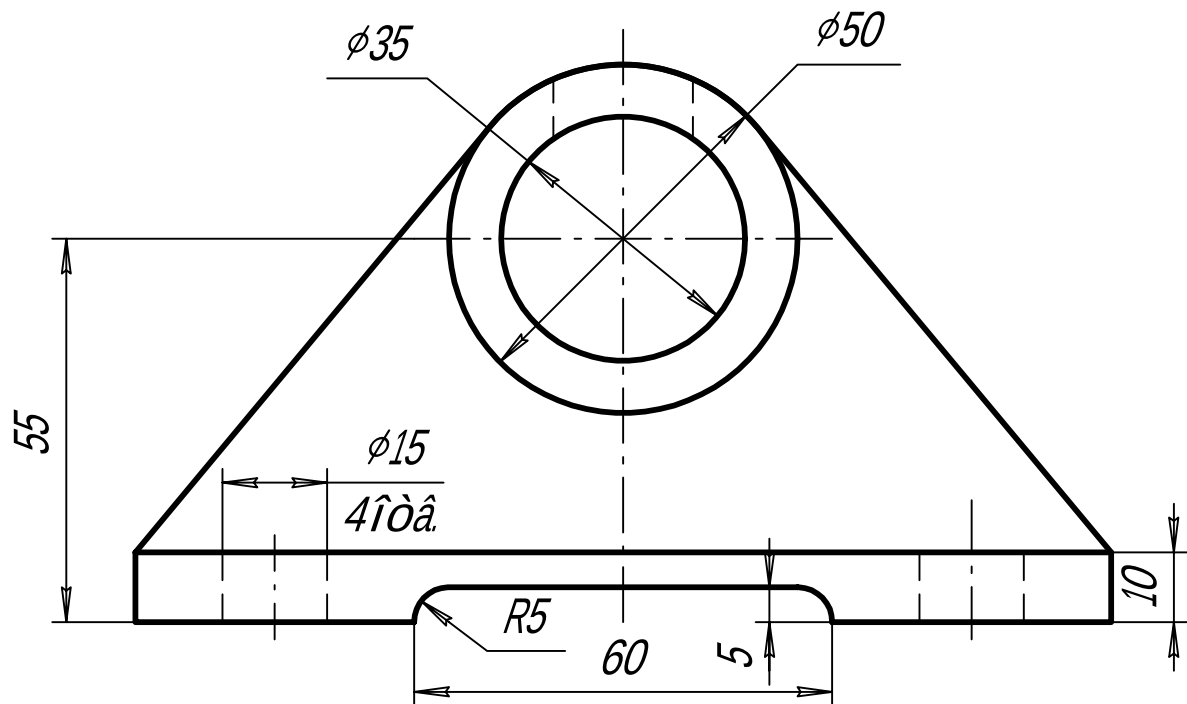
3T.01





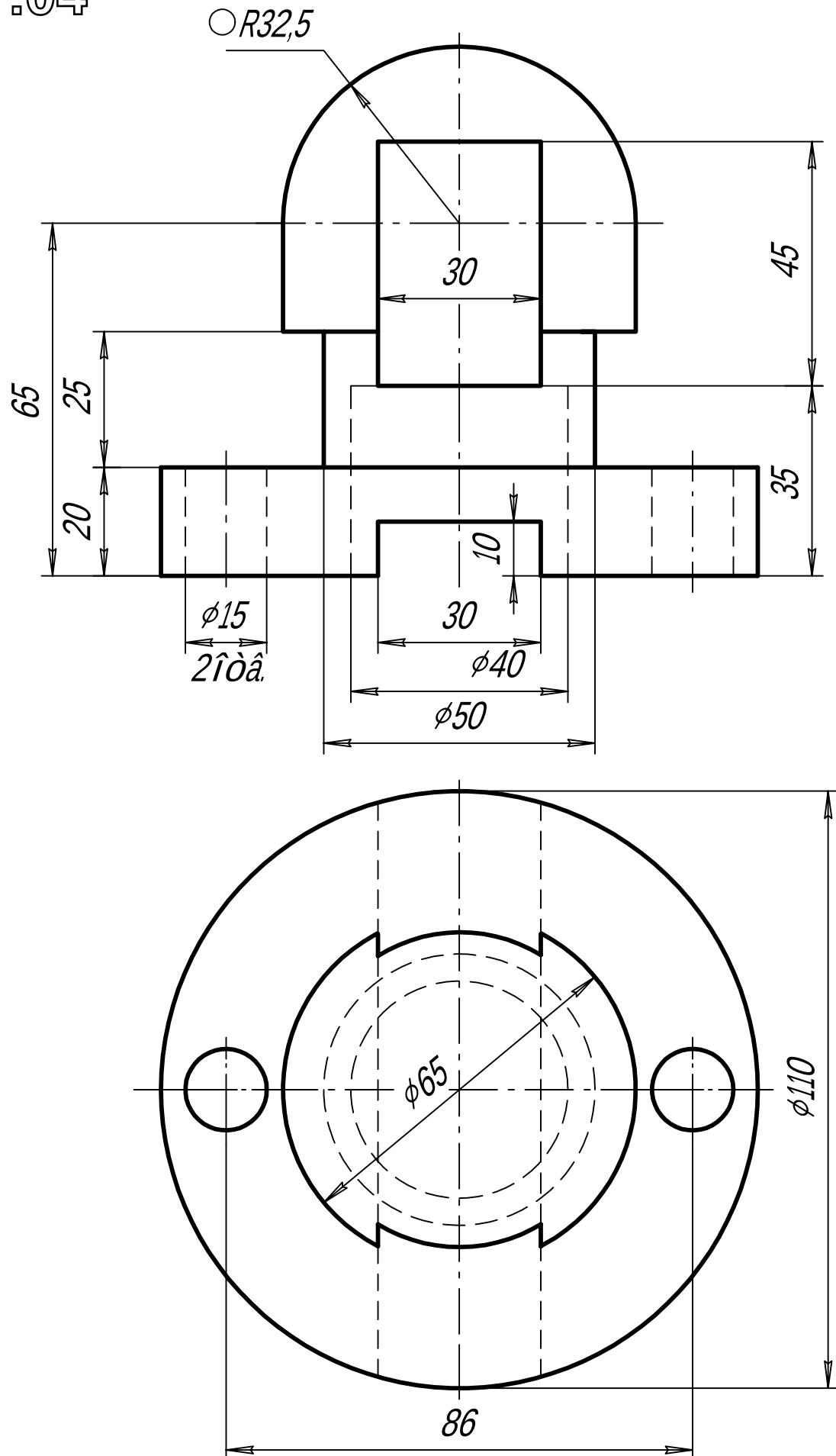
3T.02





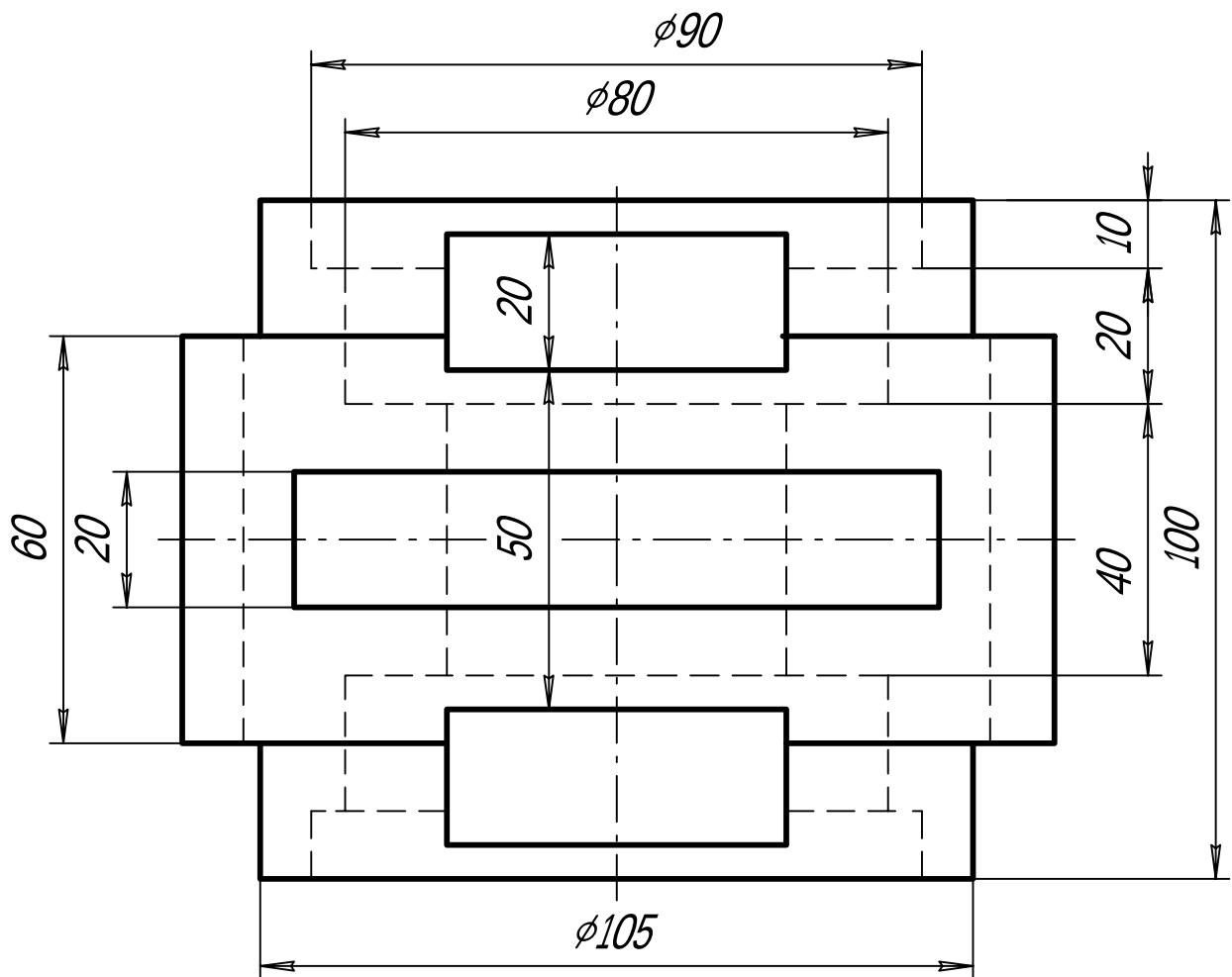
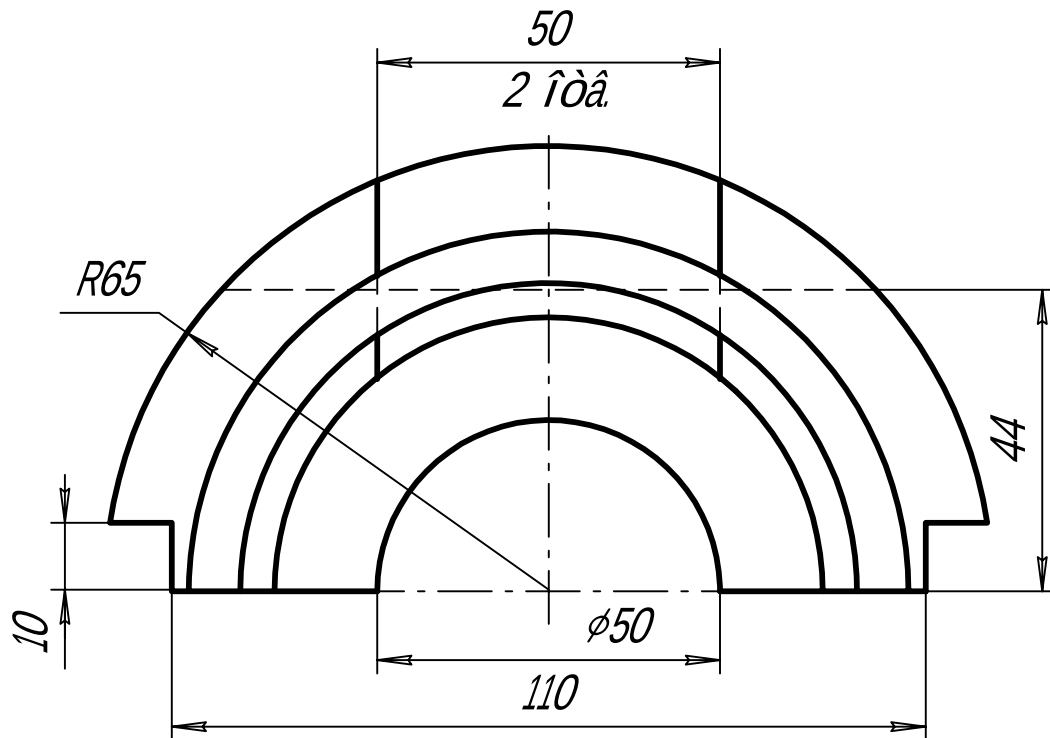


3T.04



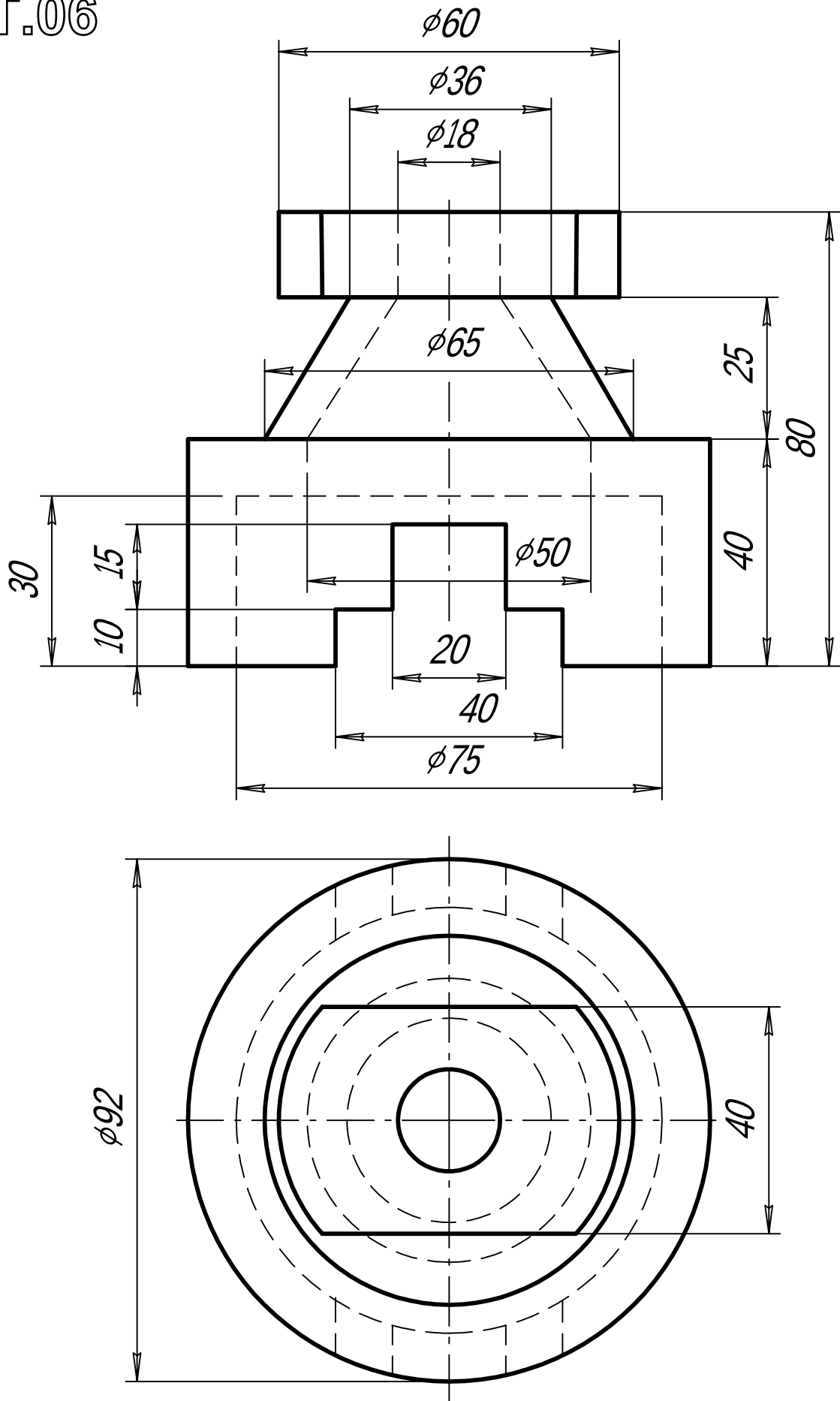


3T.05





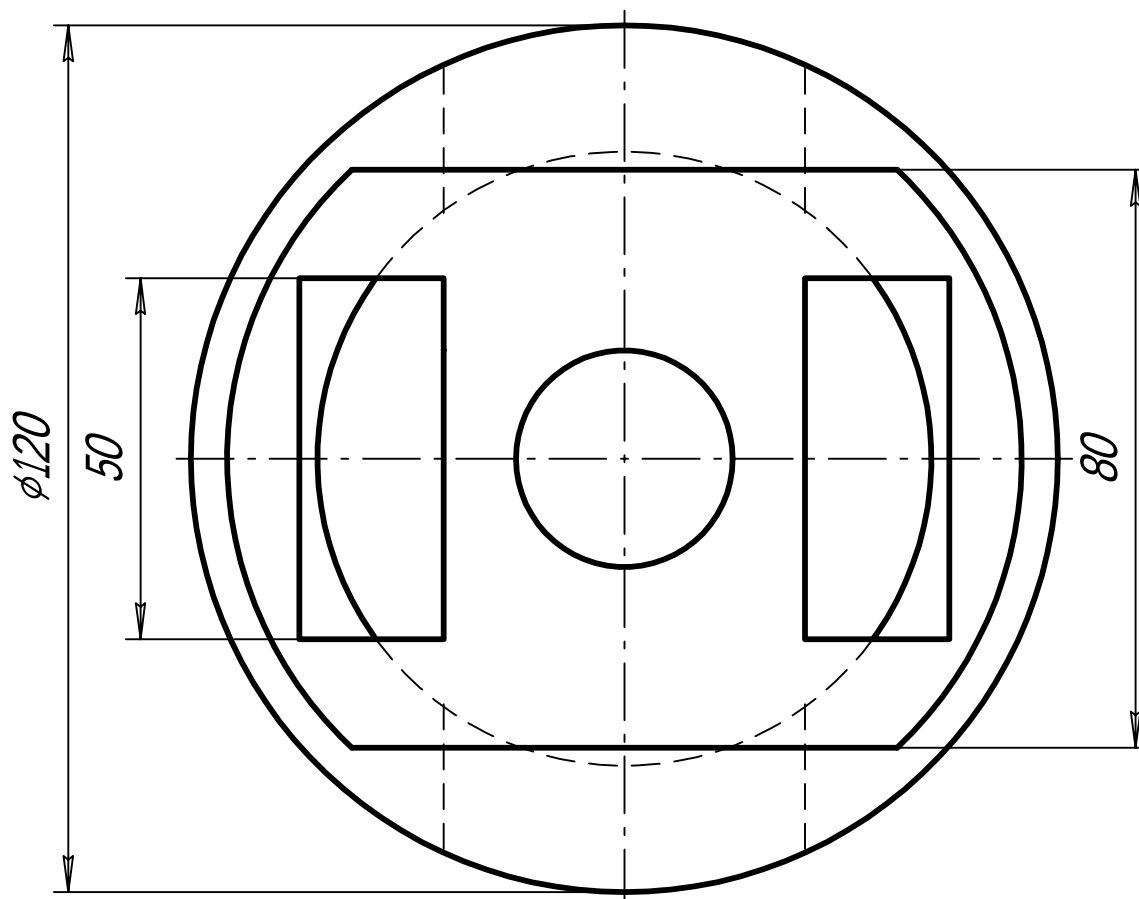
3T.06



Technical drawing of a mechanical part, showing a front view and a top view. The part is a cylindrical component with a central hole and a rectangular slot.

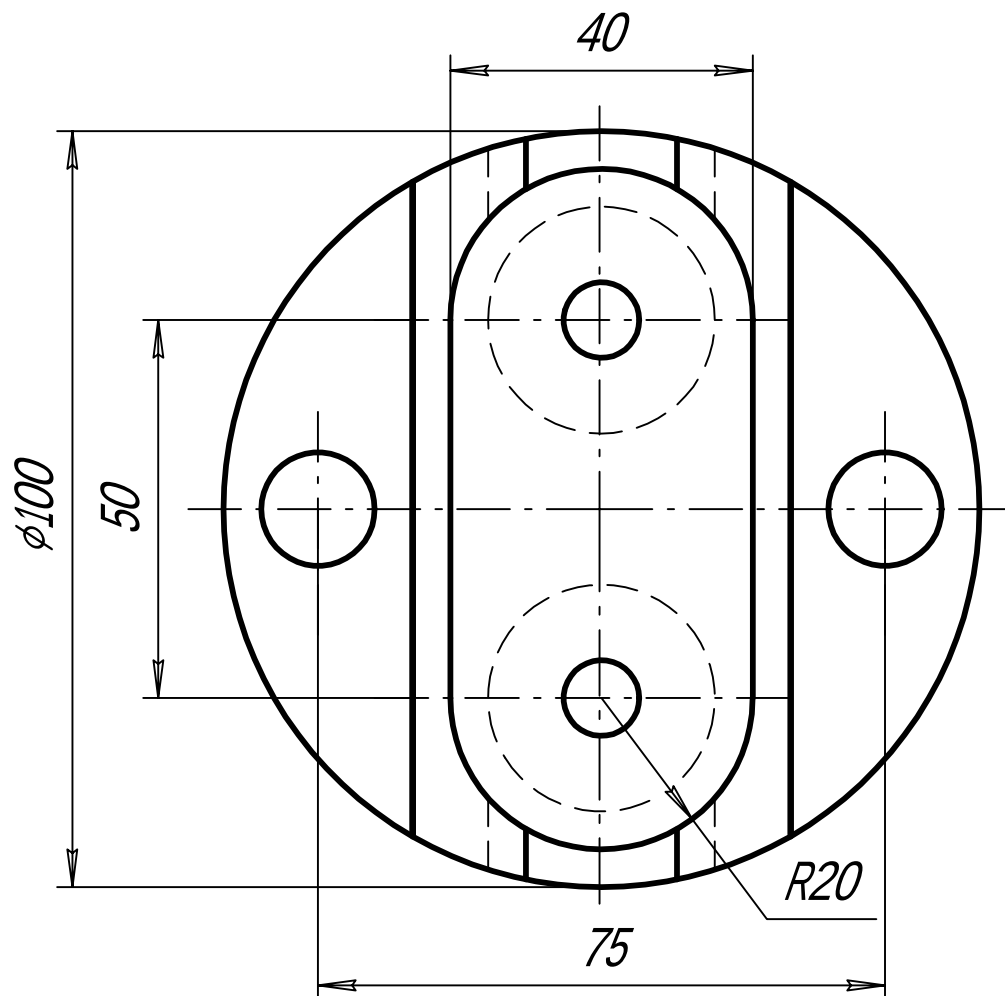
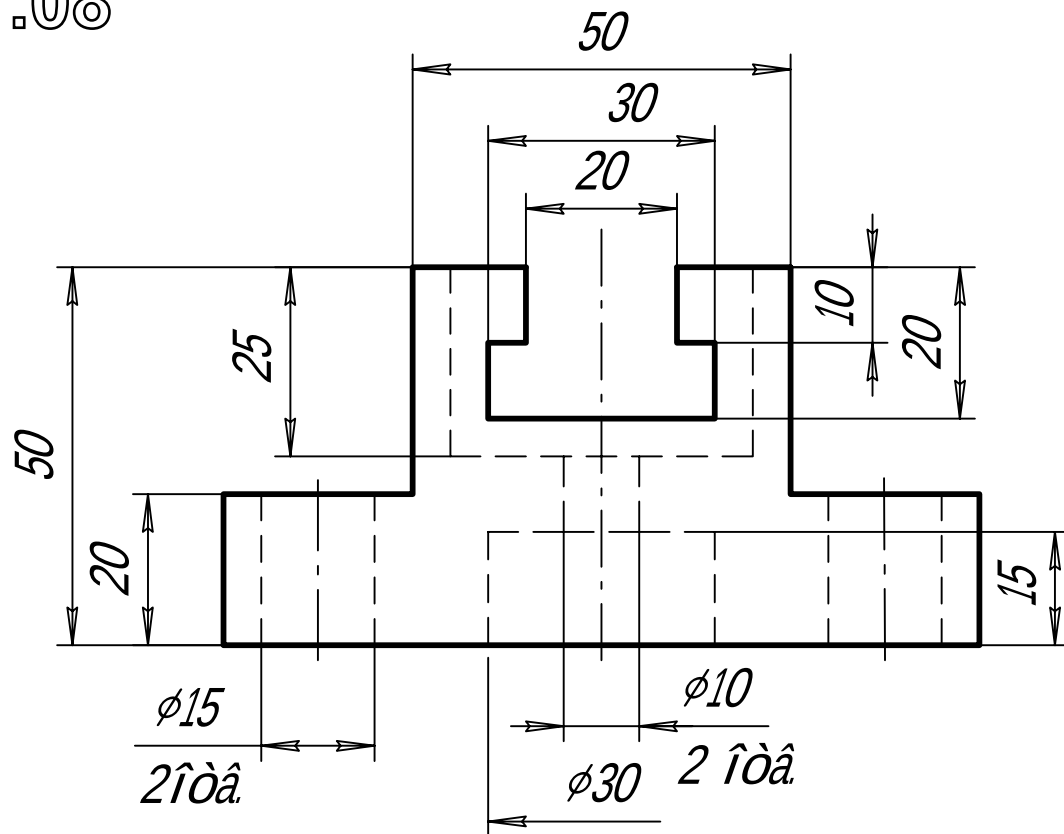
Dimensions:

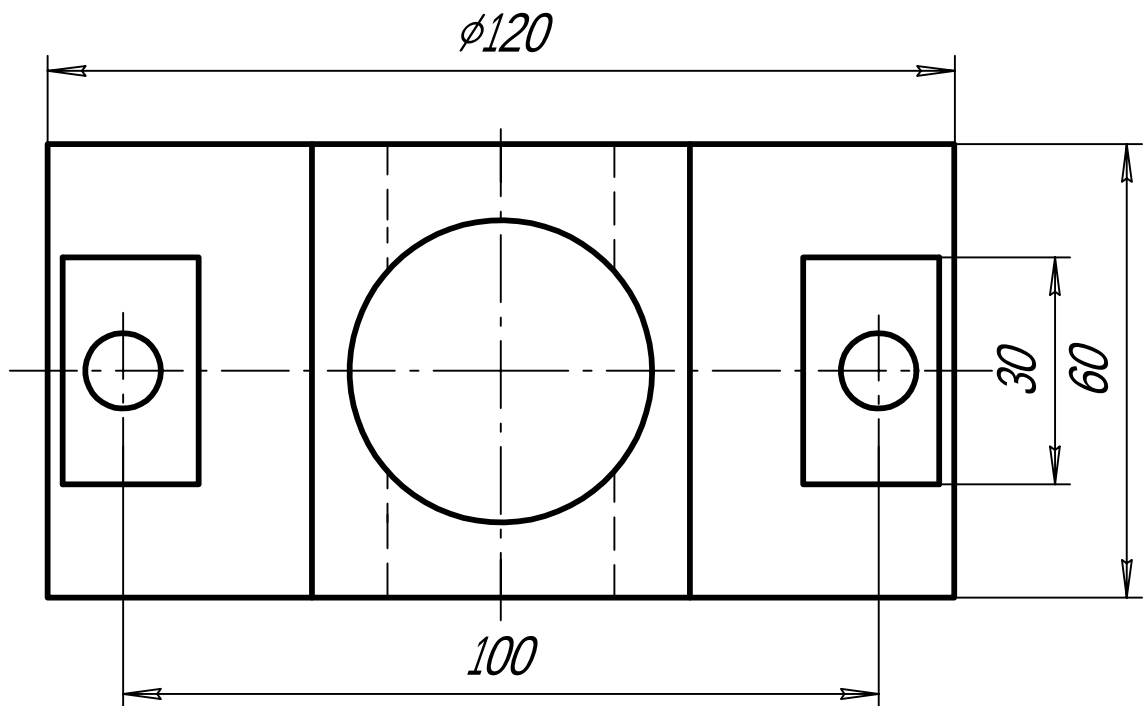
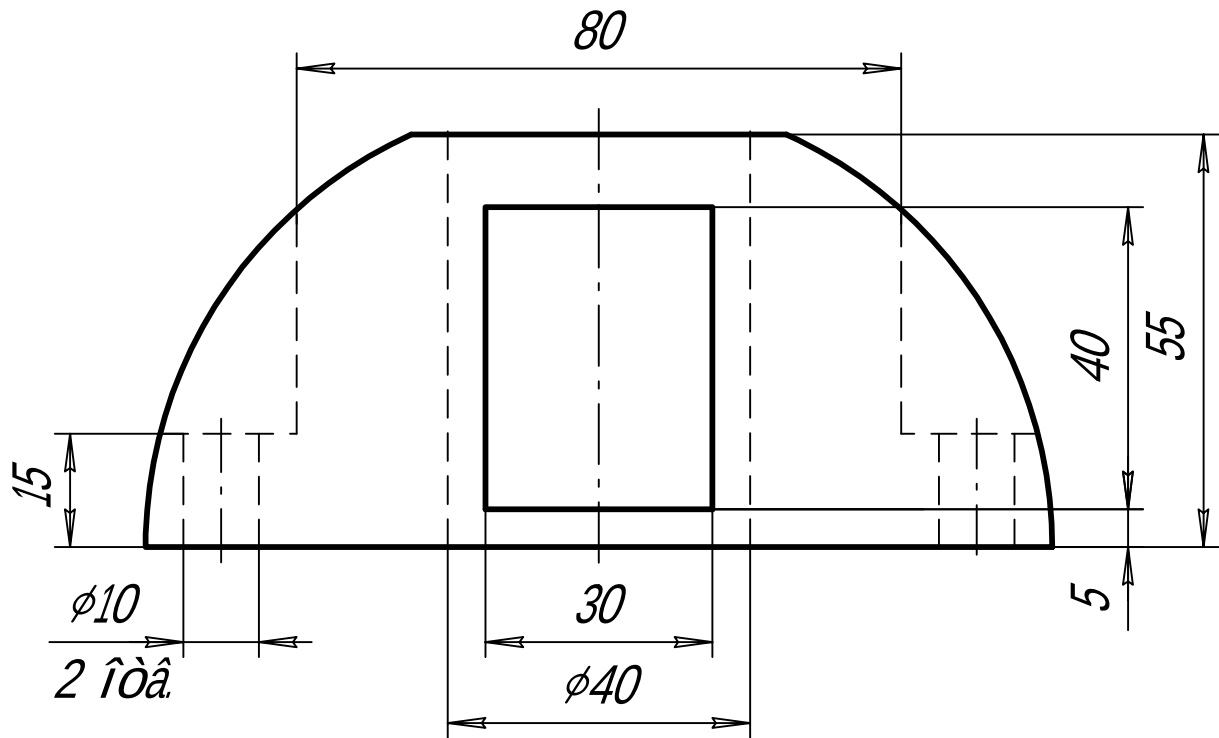
- Overall diameter: $\phi 110$
- Overall height: 70
- Top flange thickness: 15
- Central hole diameter: $\phi 30$
- Distance from left edge to center of hole: 50
- Distance from right edge to center of hole: 50
- Distance from left edge to start of slot: 20
- Distance from right edge to end of slot: 20
- Slot width: 50
- Slot depth: 10
- Bottom flange thickness: 20
- Bottom flange outer diameter: $\phi 85$
- Bottom flange inner diameter: 50





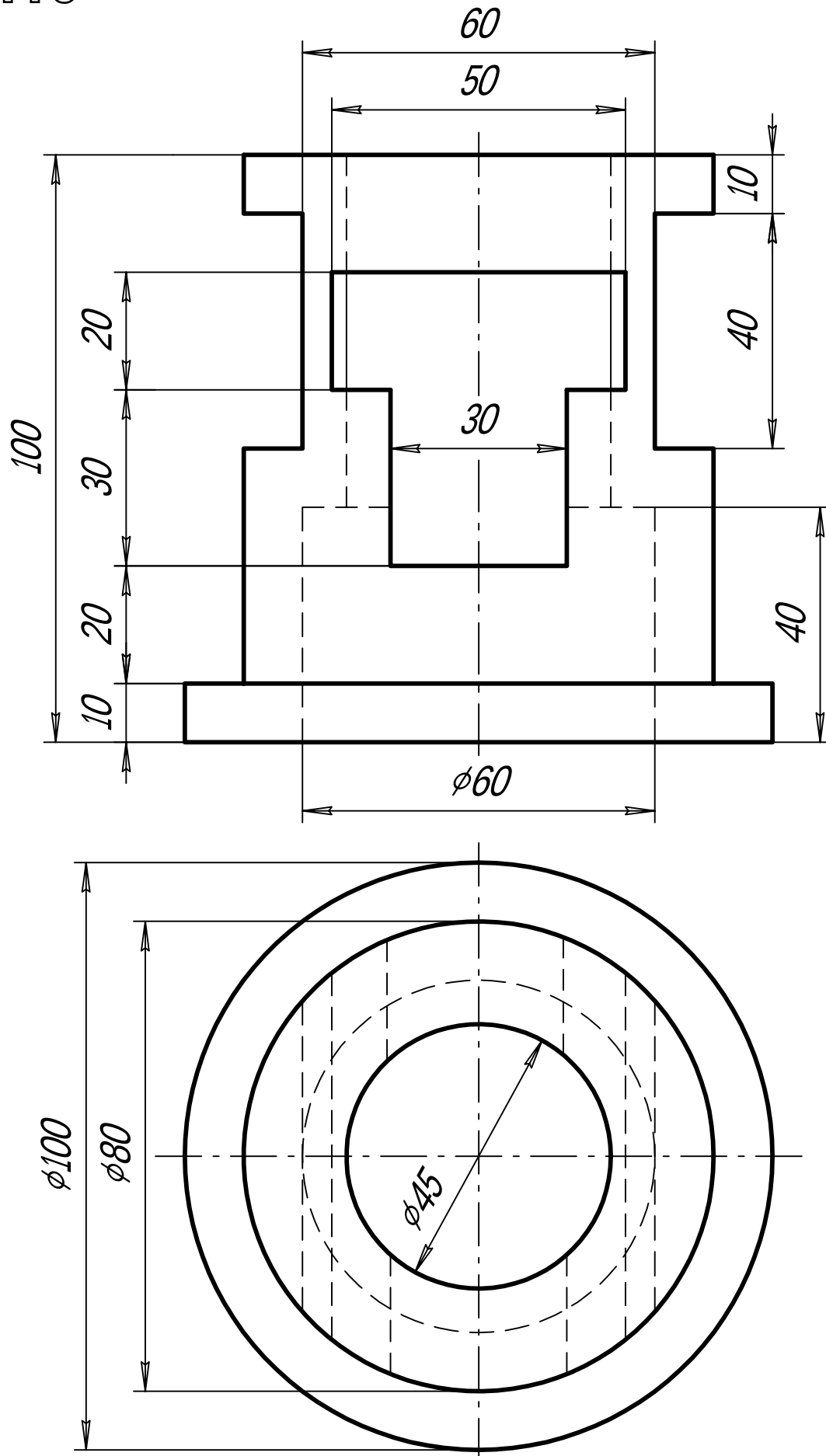
3T.08





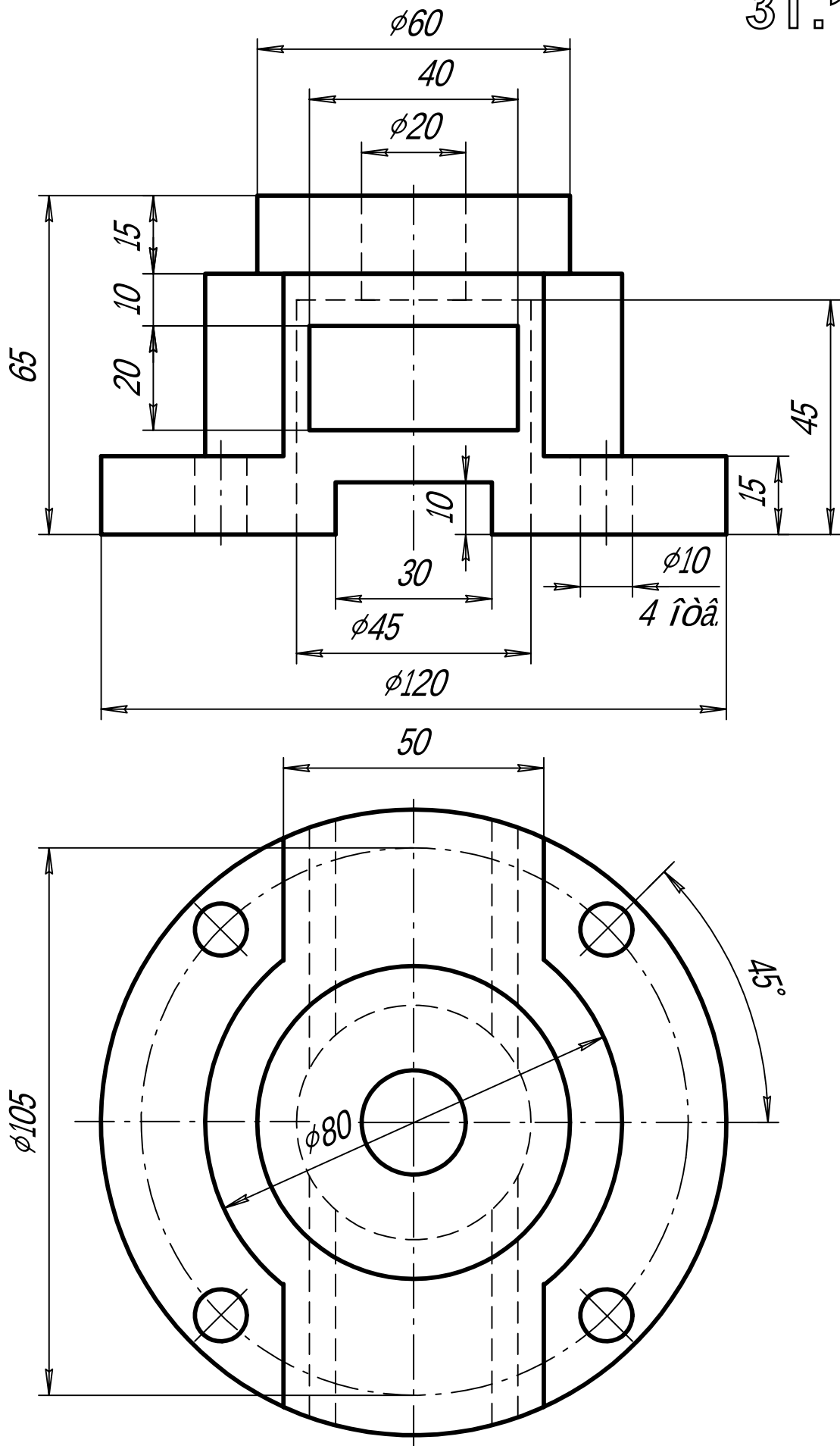


3T.10



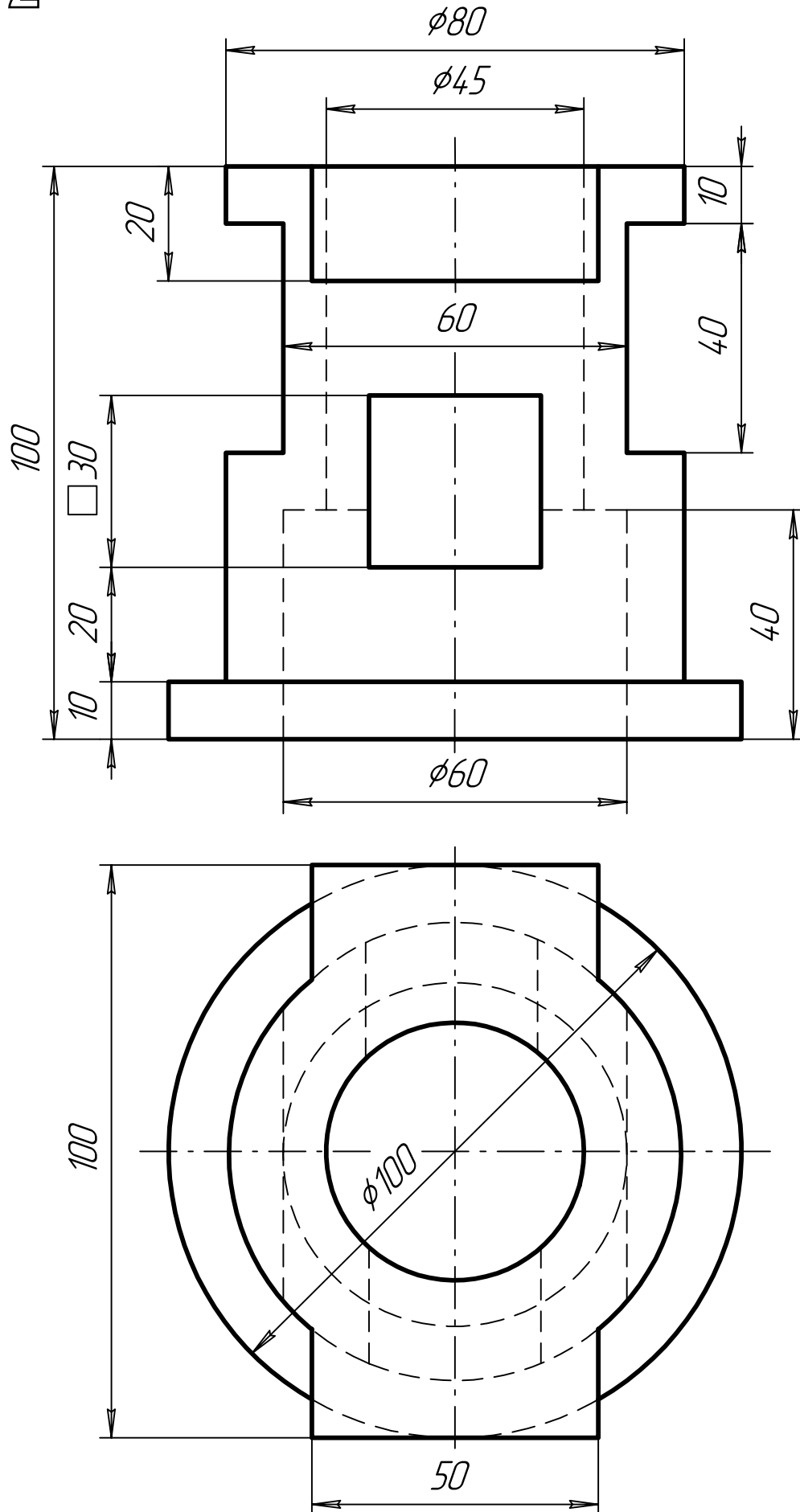


3T.11



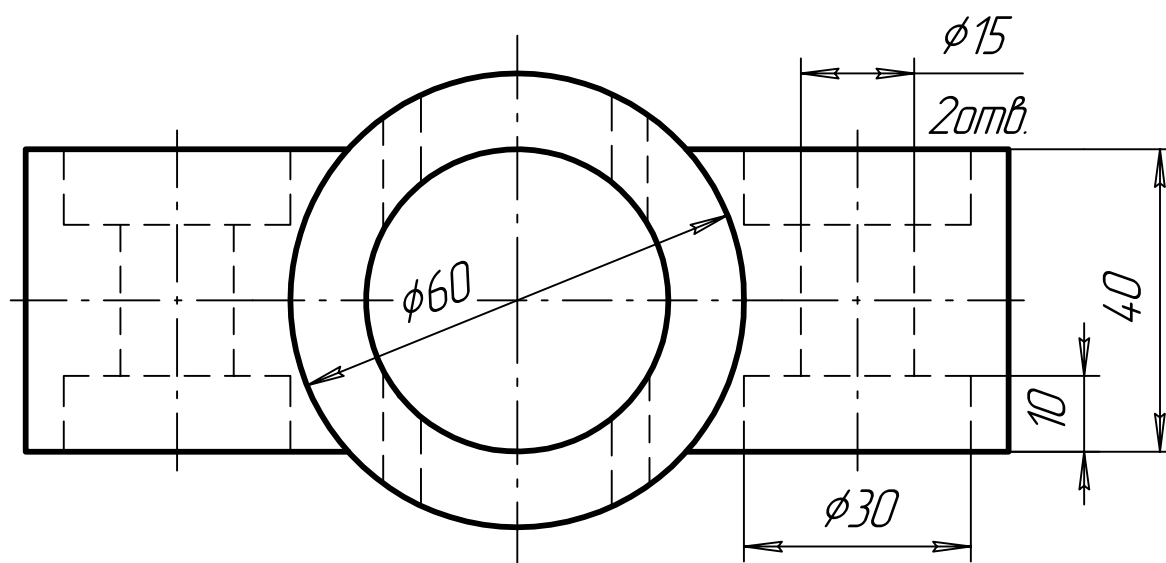
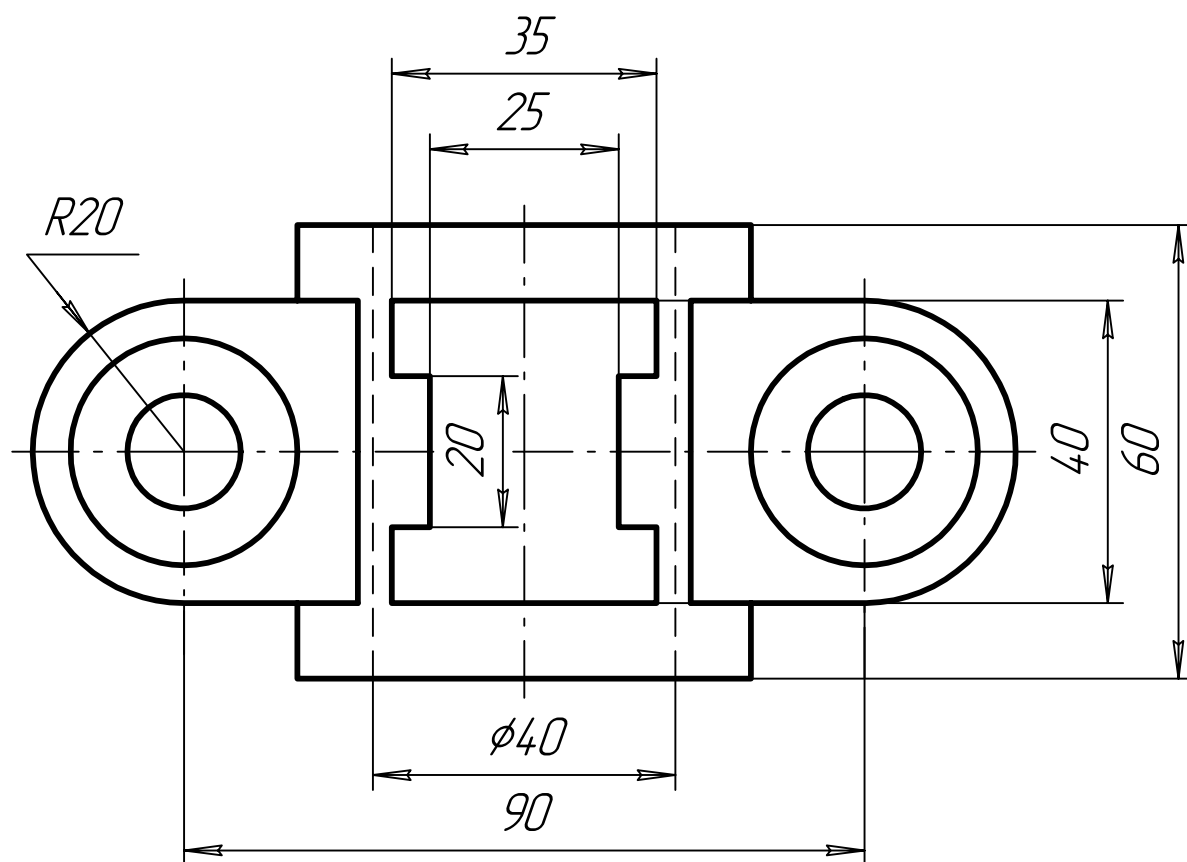


3T.12

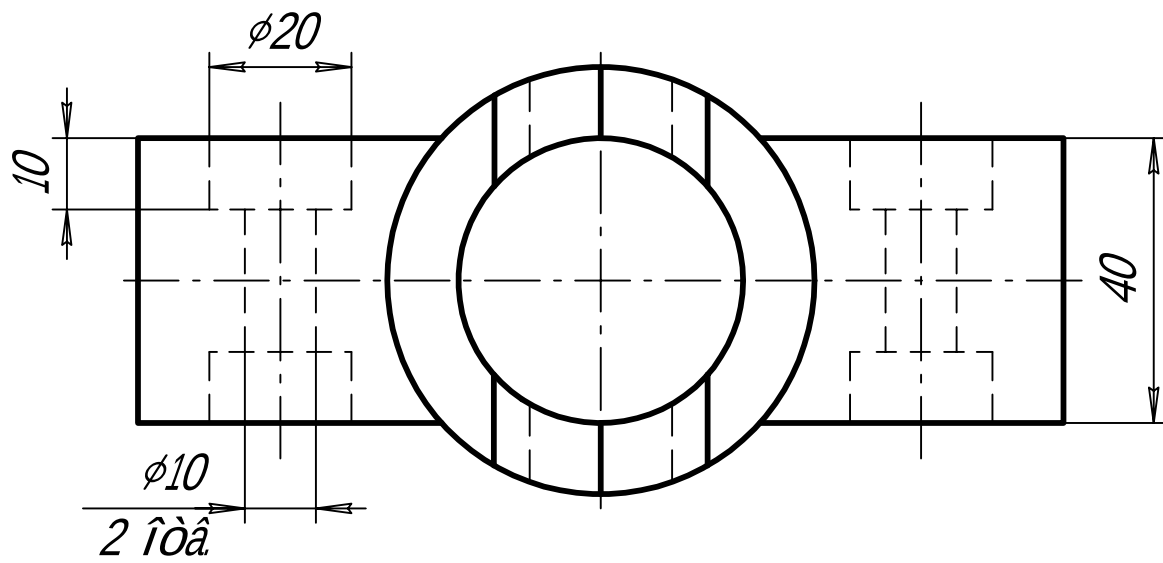




3T.13

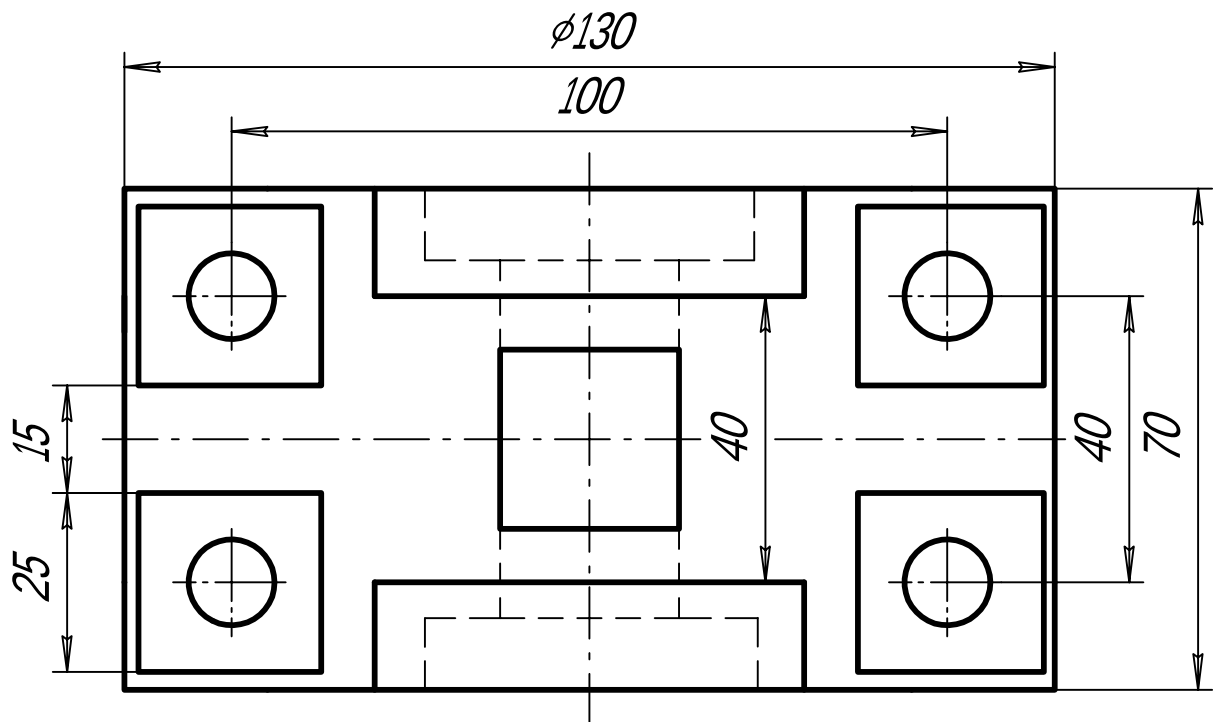
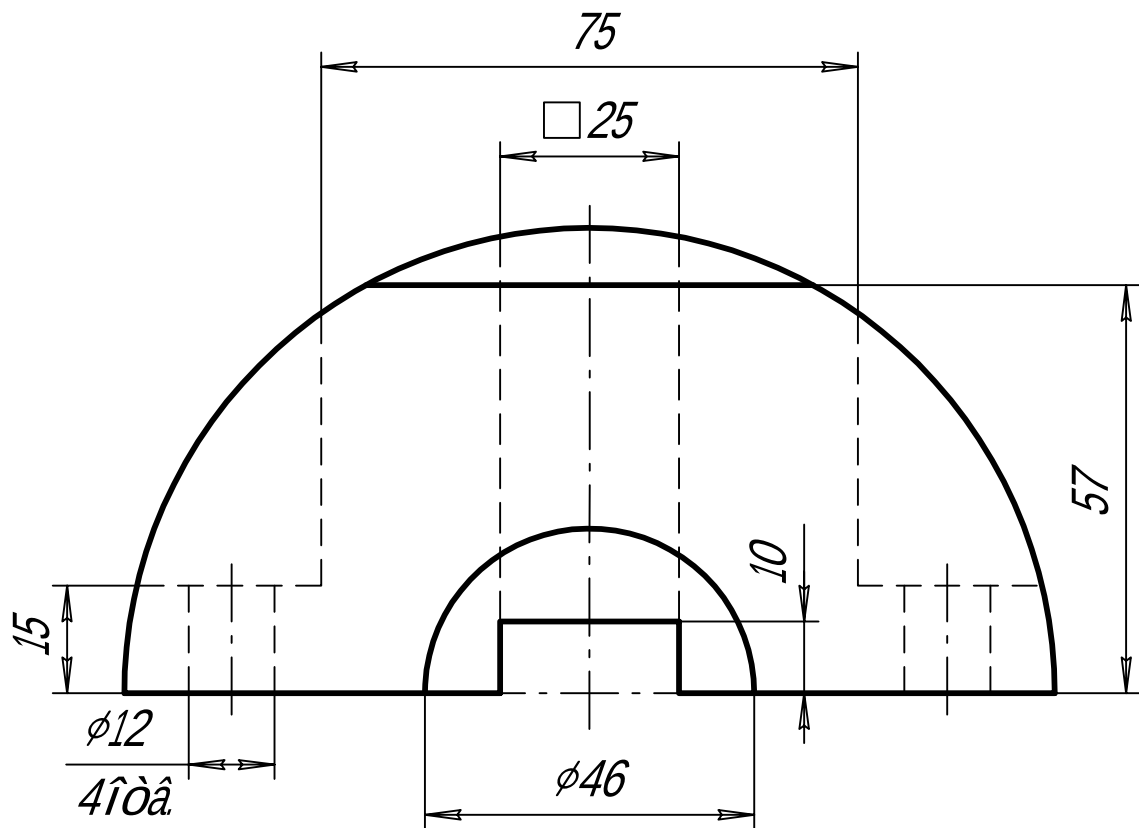


Technical drawing of a mechanical part (Fig. 1.10) showing a front view with dimensions. The part has a total width of 130 and a total height of 55. It features two circular holes with a diameter of 40, each with a radius of R20. The distance between the centers of the holes is 90. The top surface has a central V-shaped cutout with a width of 30 at the top and a depth of 25. The bottom surface has a central rectangular cutout with a width of 20 and a depth of 10. The part is symmetrical about a vertical centerline.





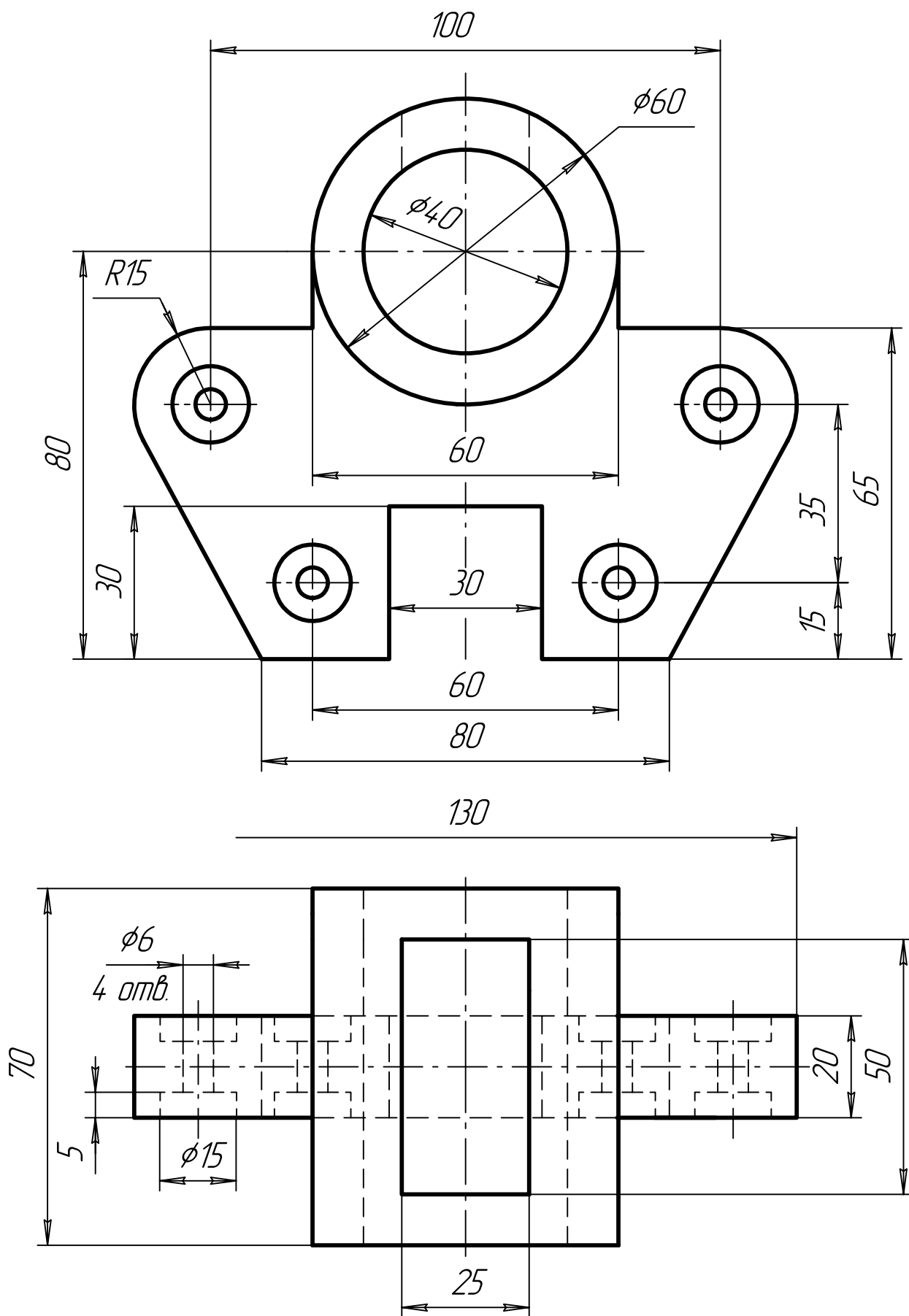
3T.15



[illegible]

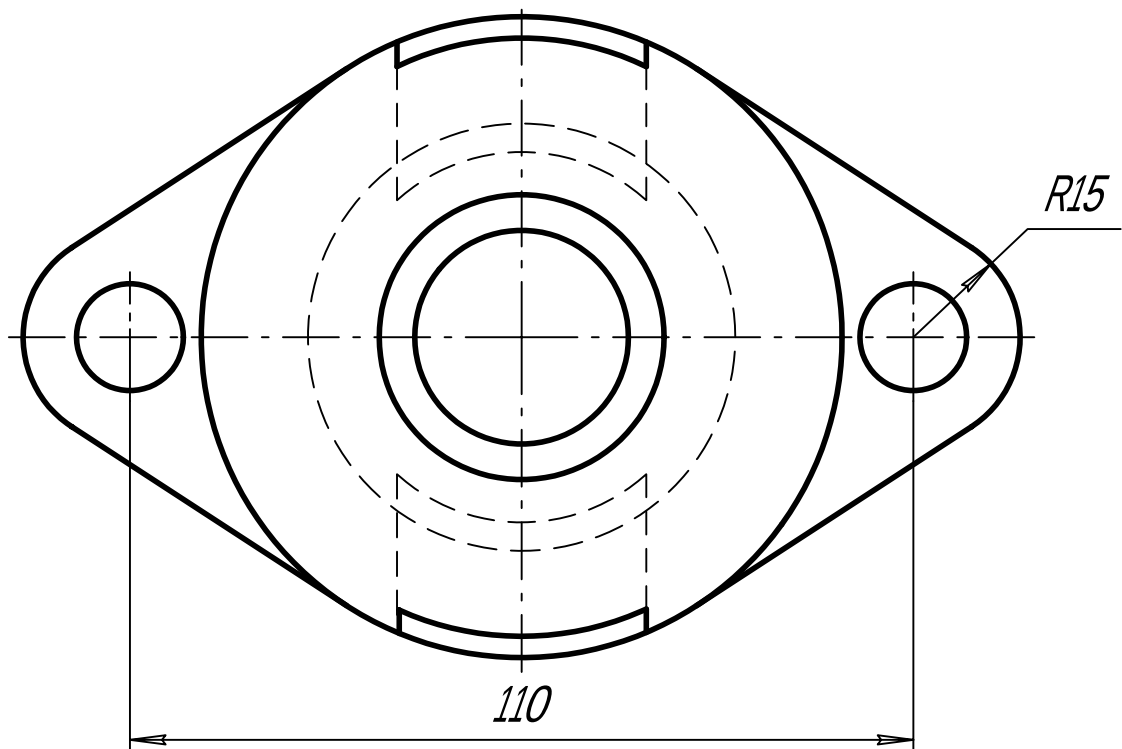
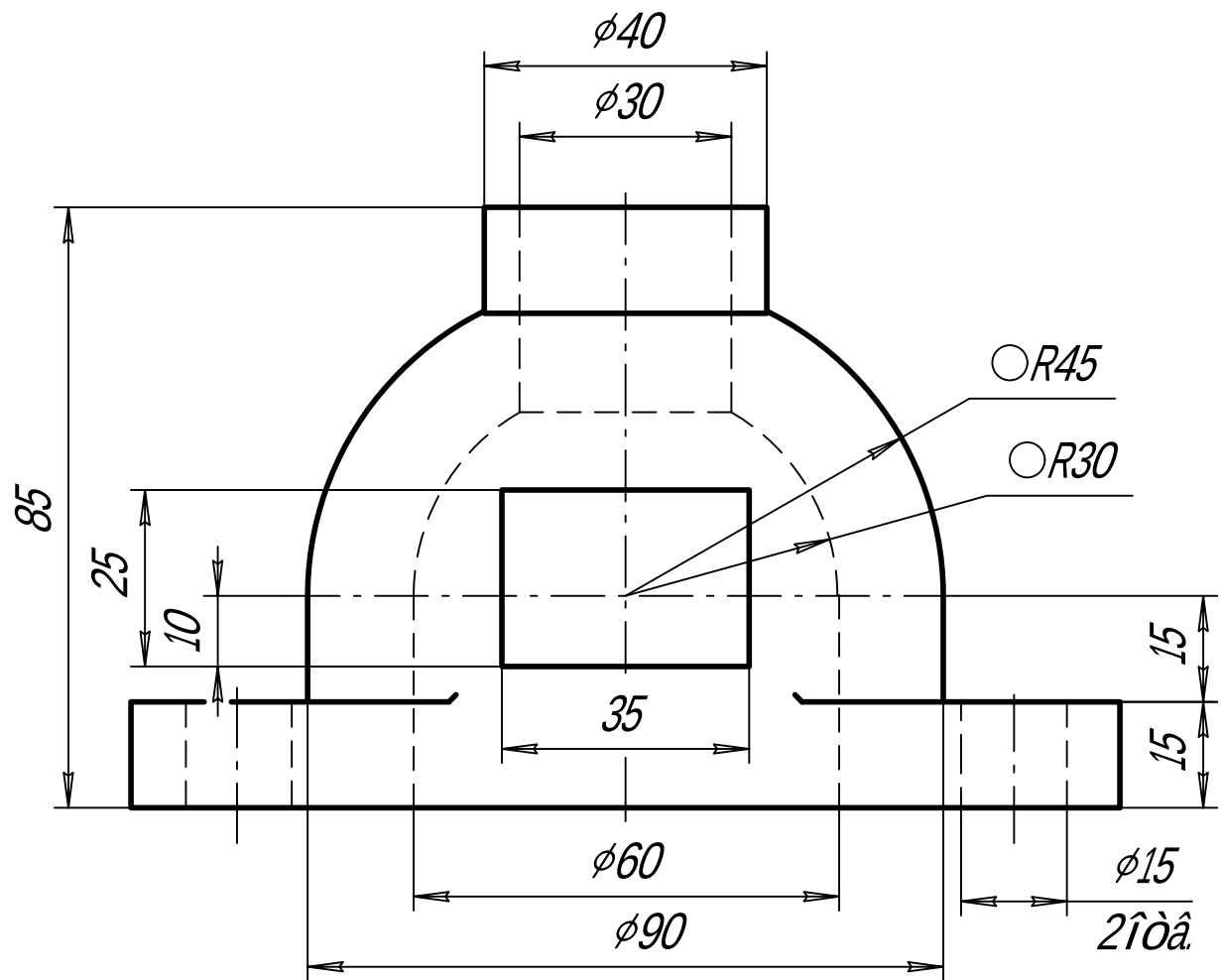


3Т.17



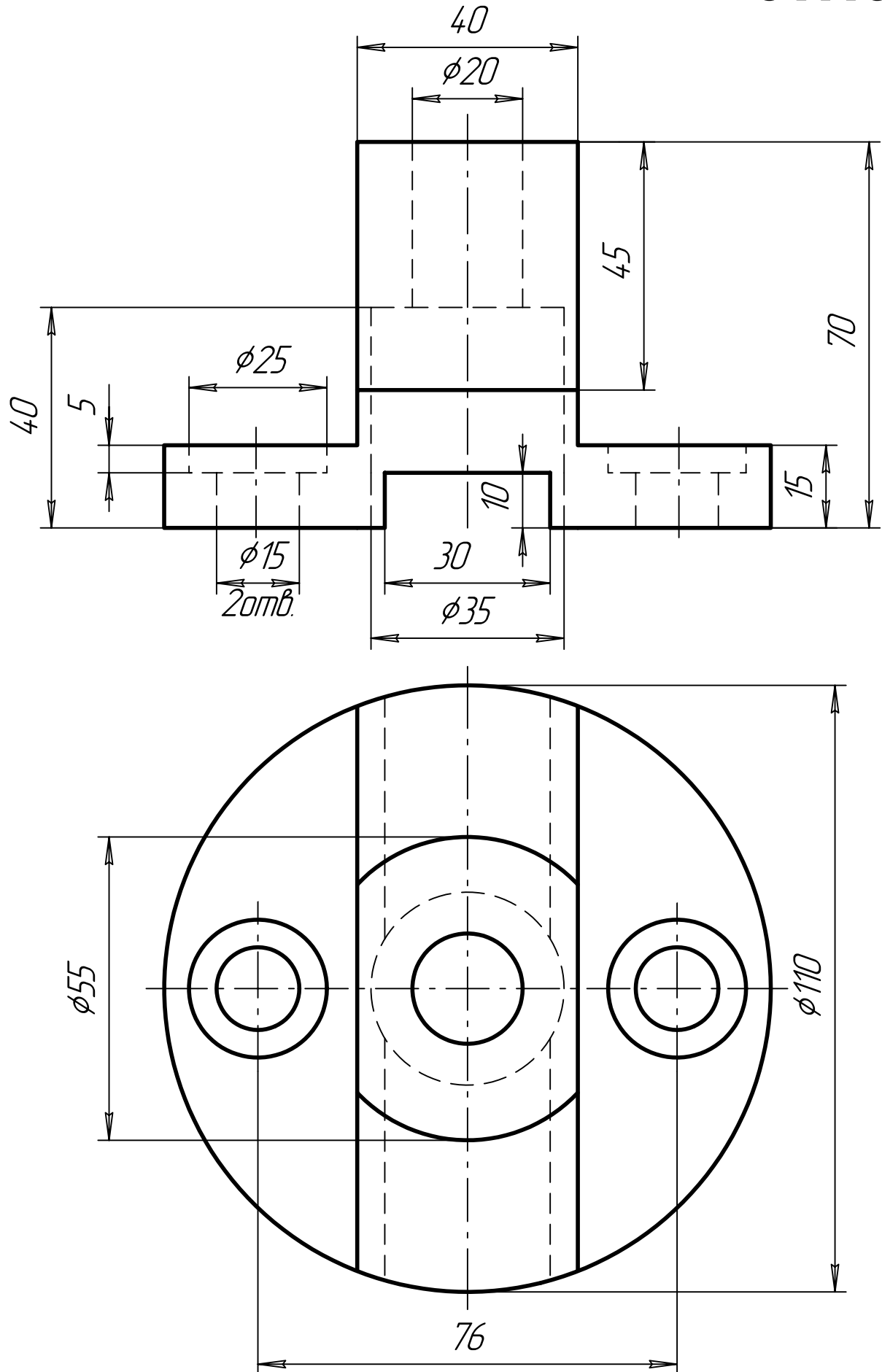


3T.18





3T.19



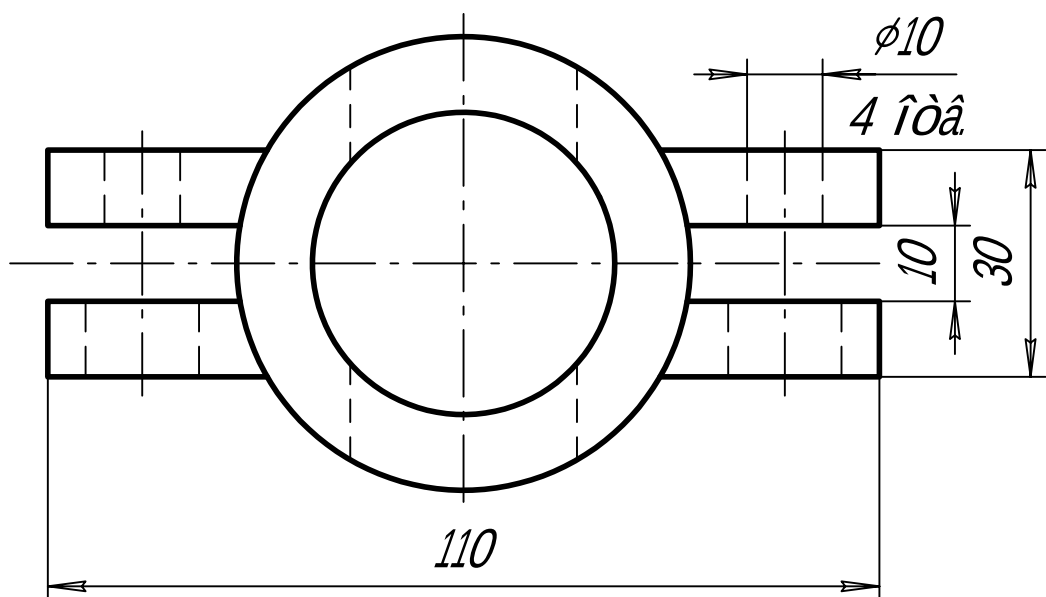
Technical drawing of a mechanical part, showing front and side views with dimensions.

Front View Dimensions:

- Overall width: 85
- Overall height: 55
- Distance between centers of the two circular features: 60 ($\phi 60$)
- Radius of the circular features: 7.5 ($R7,5$)
- Distance from the center of the part to the center of the left circular feature: 30
- Distance from the center of the part to the center of the right circular feature: 30
- Distance from the center of the part to the center of the top circular feature: 35
- Distance from the center of the part to the center of the bottom circular feature: 35
- Distance from the center of the part to the center of the left circular feature: 35
- Distance from the center of the part to the center of the right circular feature: 35
- Distance from the center of the part to the center of the top circular feature: 35
- Distance from the center of the part to the center of the bottom circular feature: 35

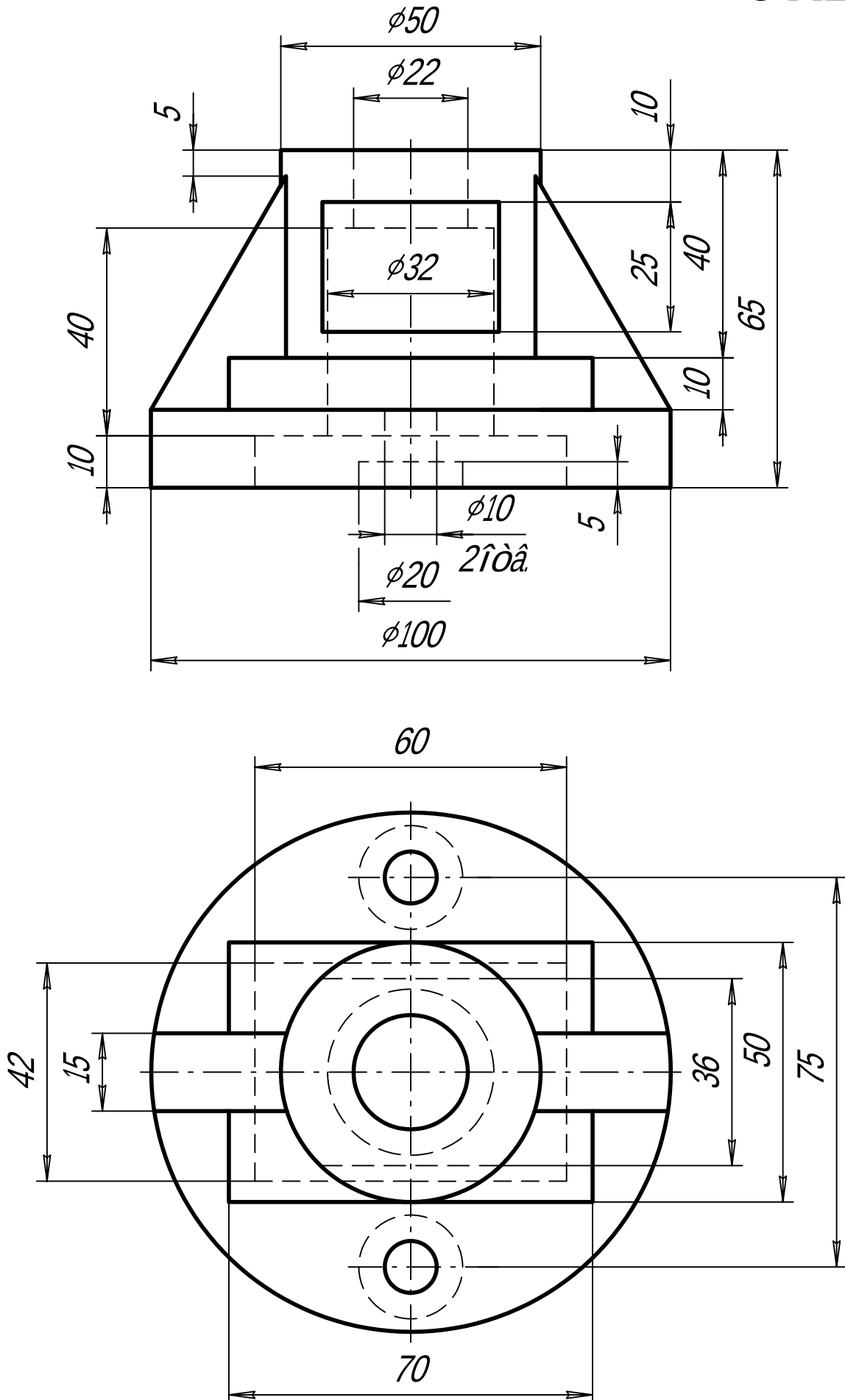
Side View Dimensions:

- Overall width: 15
- Overall height: 10
- Distance from the center of the part to the center of the left circular feature: 2
- Distance from the center of the part to the center of the right circular feature: 2
- Distance from the center of the part to the center of the top circular feature: 10
- Distance from the center of the part to the center of the bottom circular feature: 10



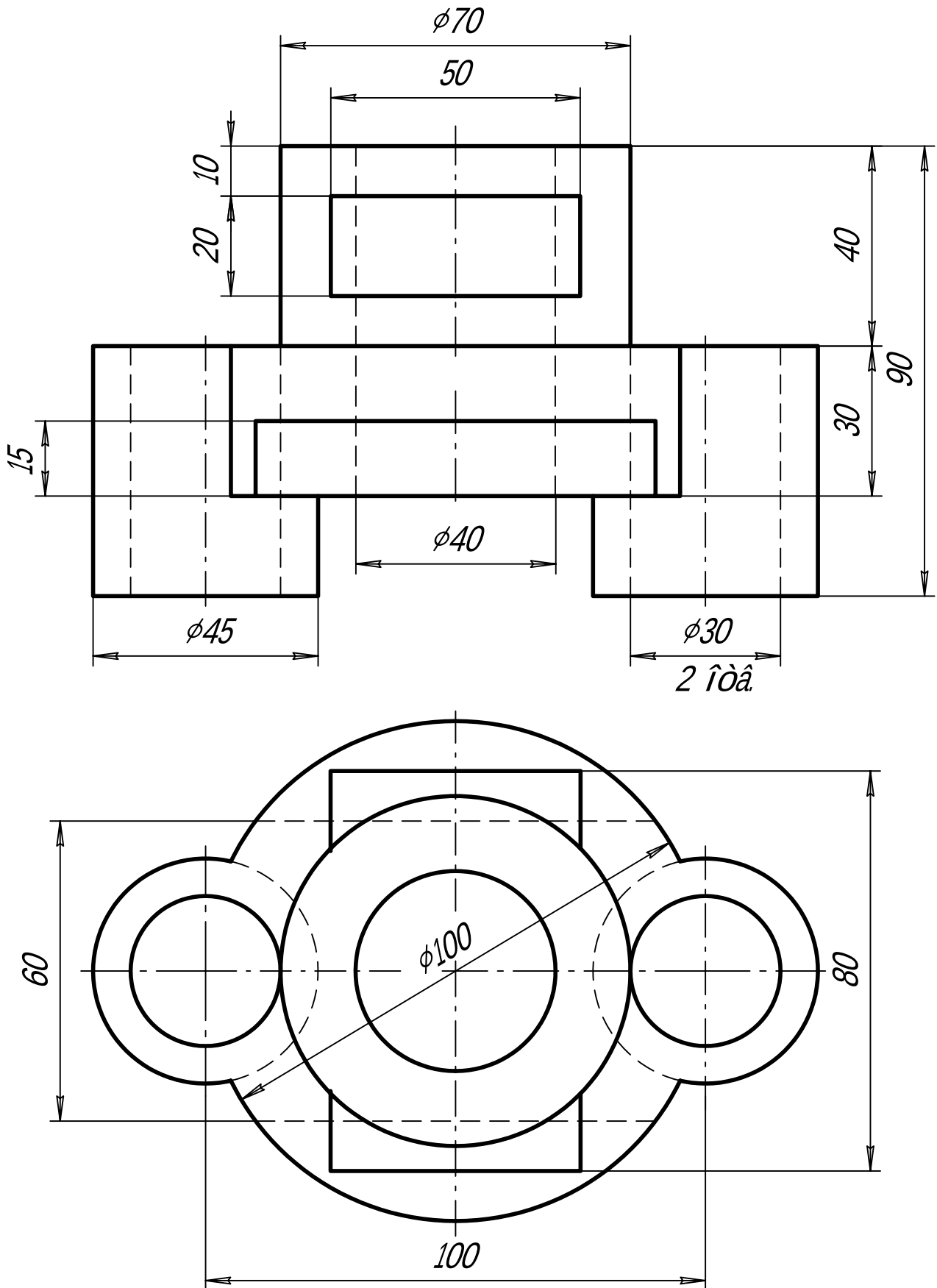


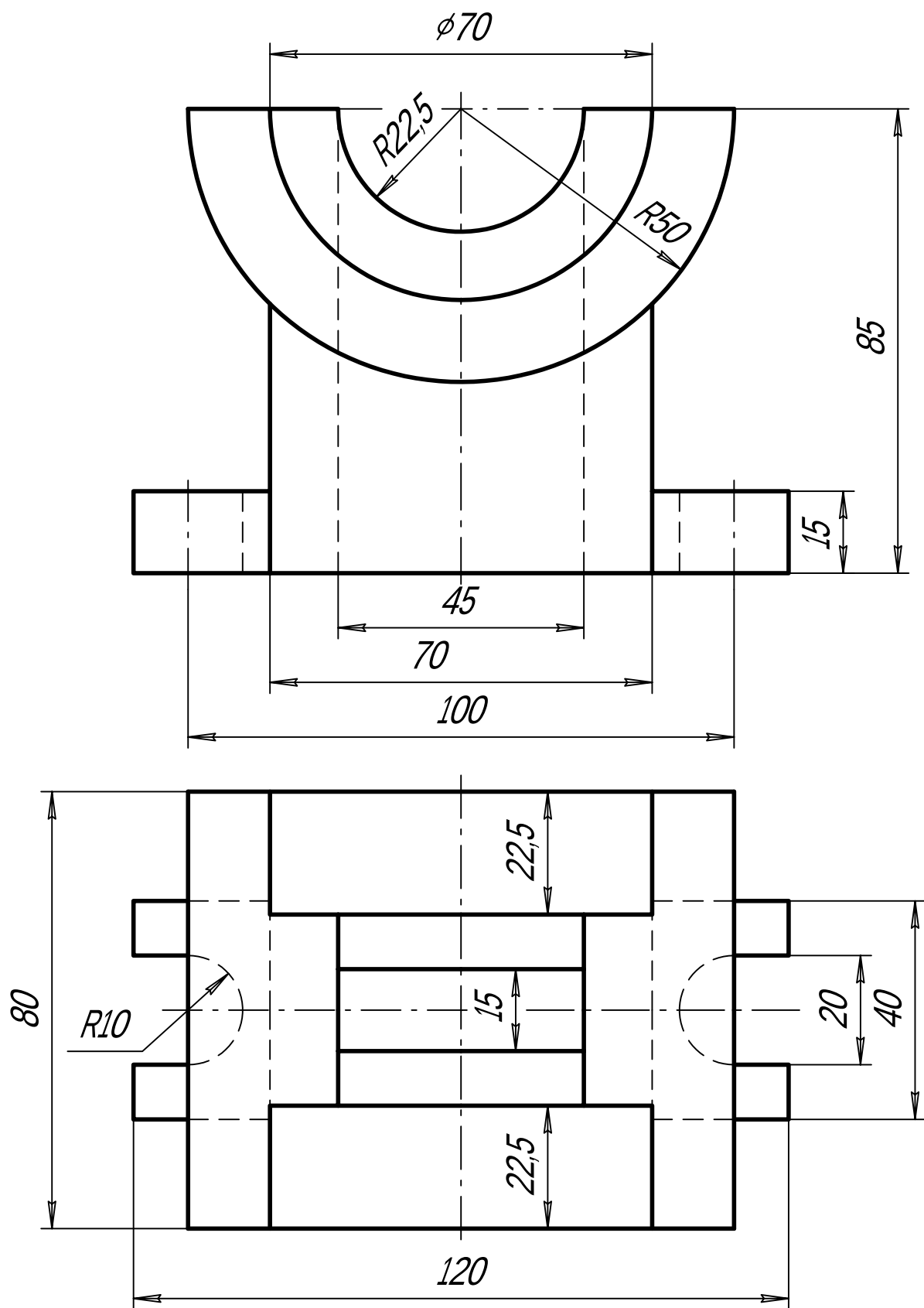
3T.21





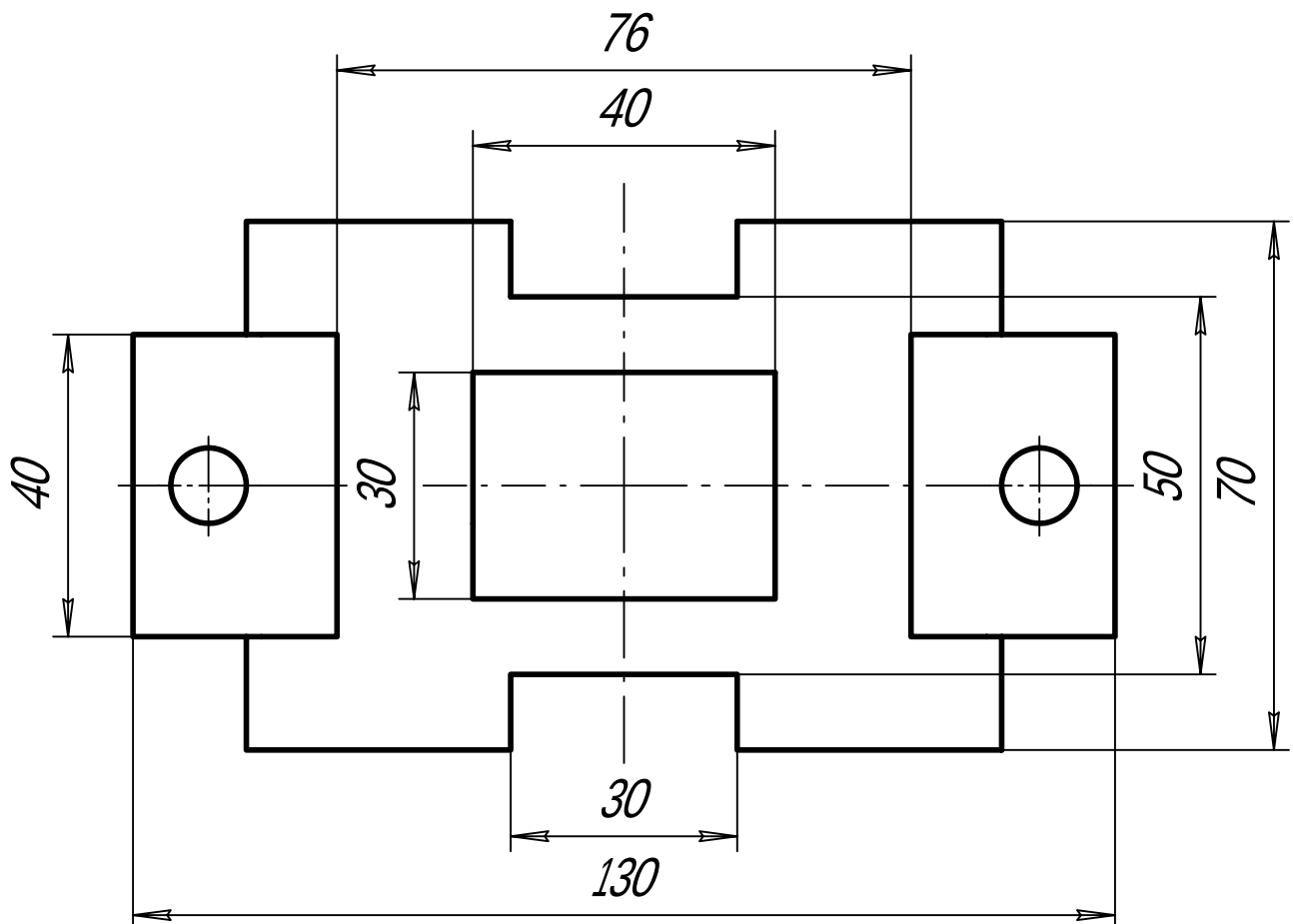
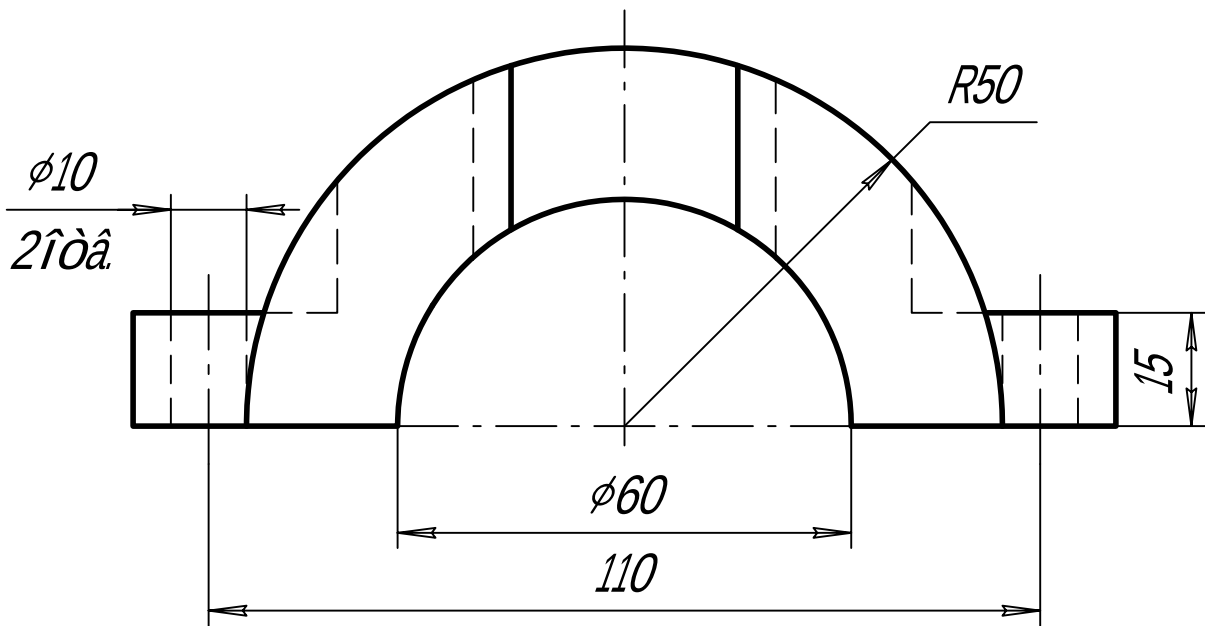
3T.22





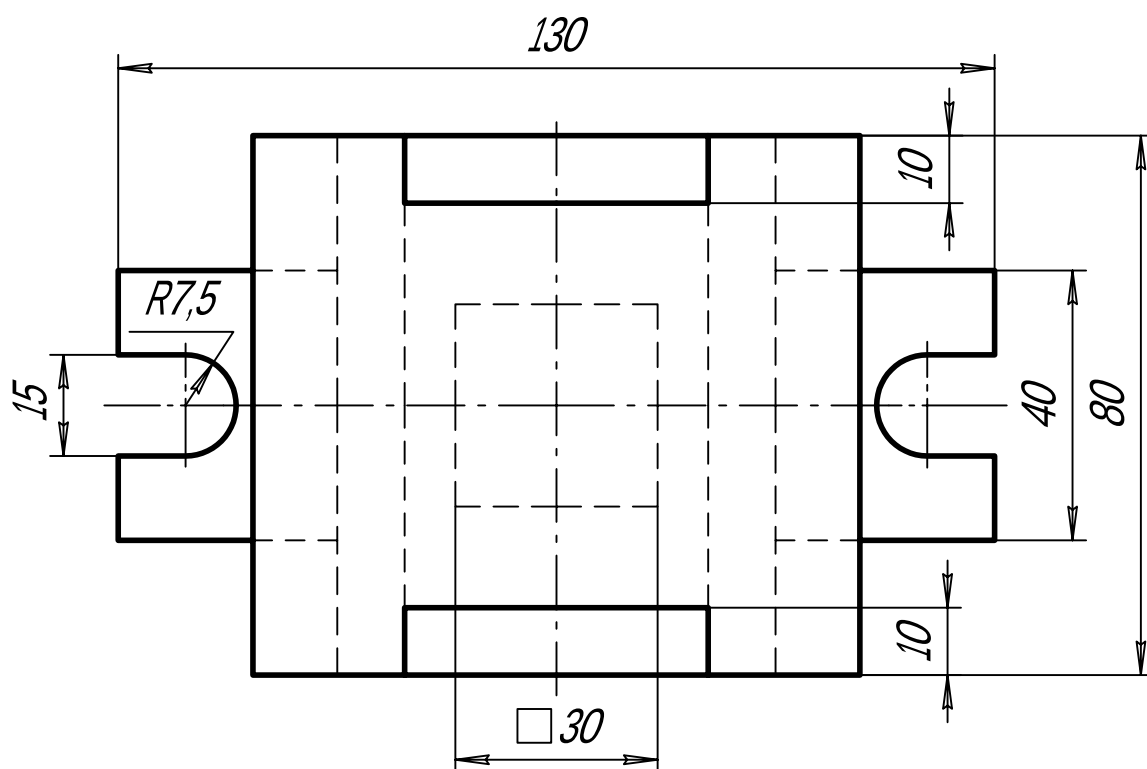
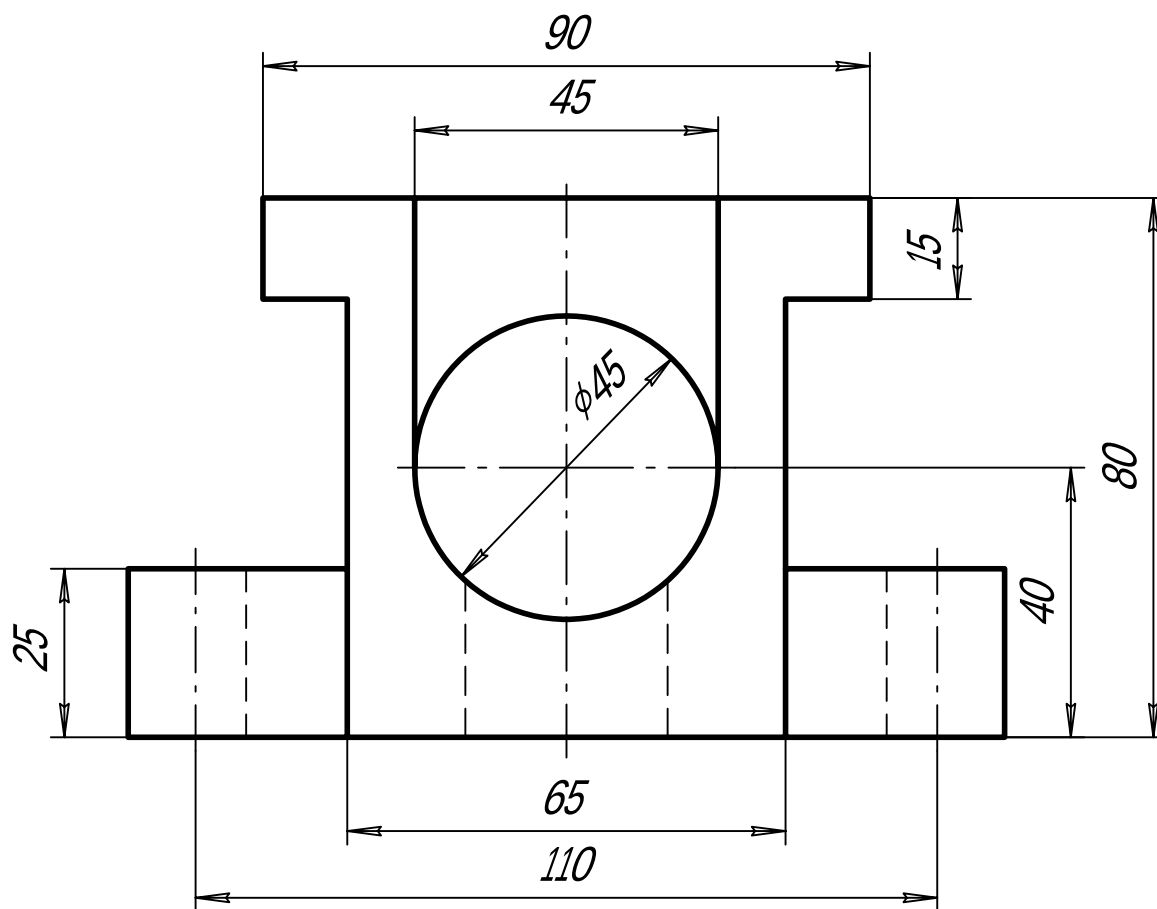


3T.24



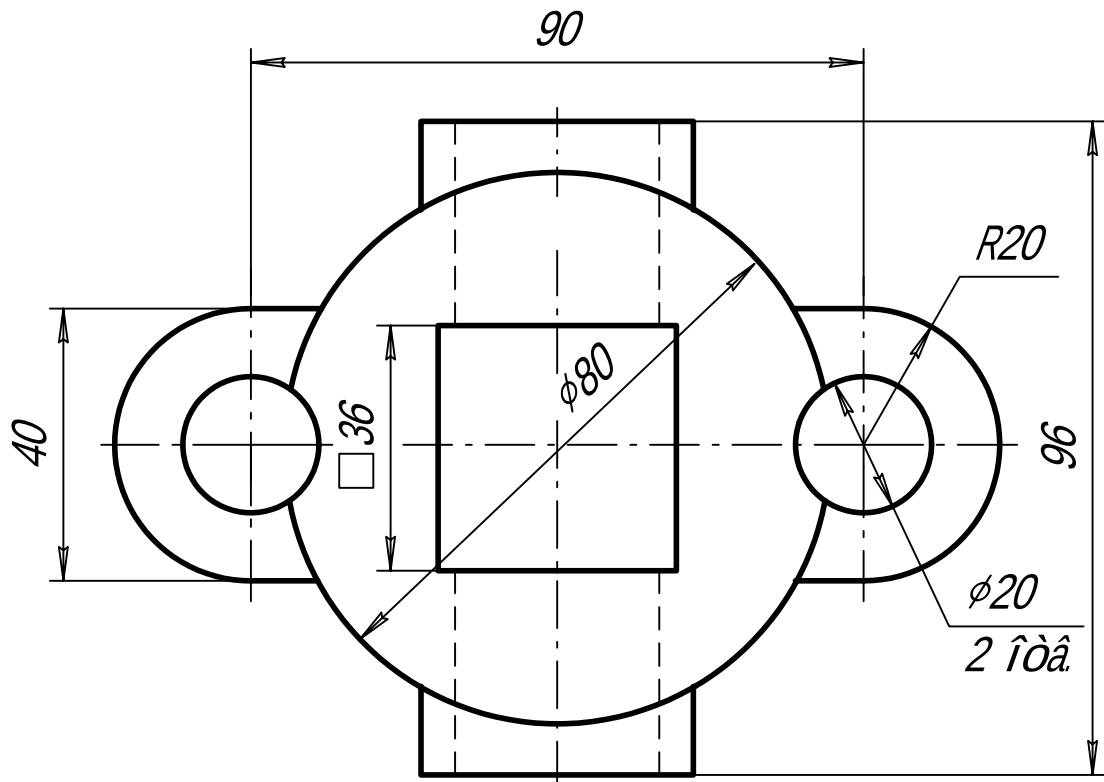
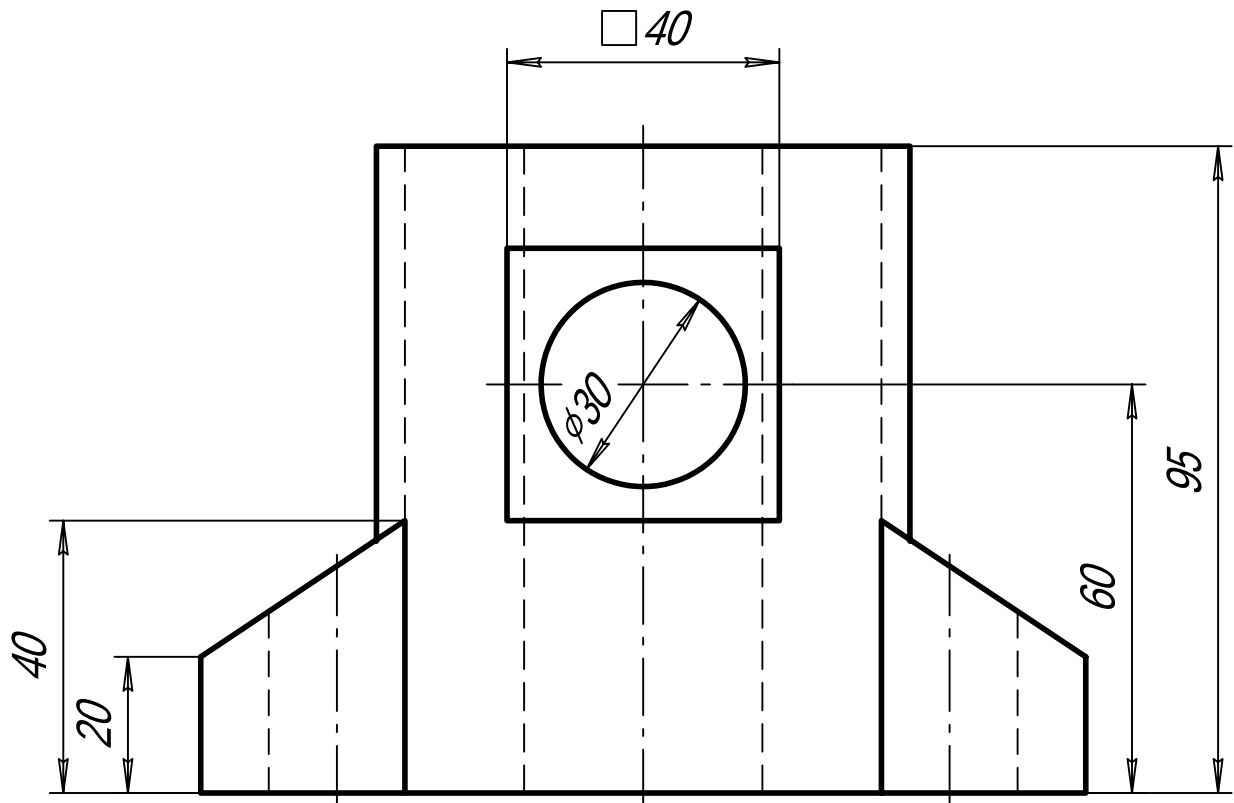


3T.25



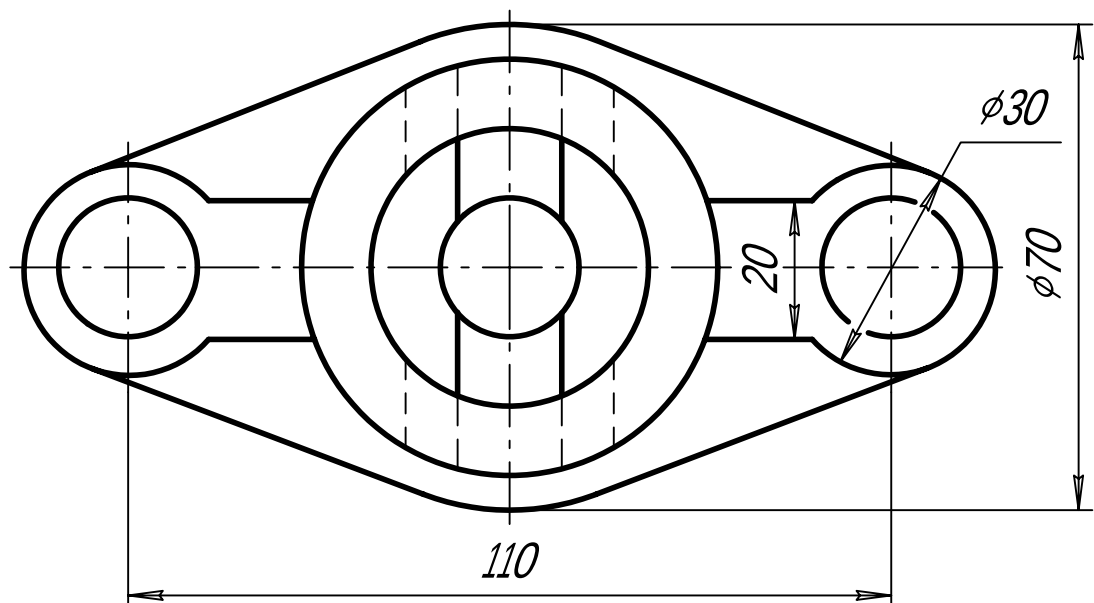
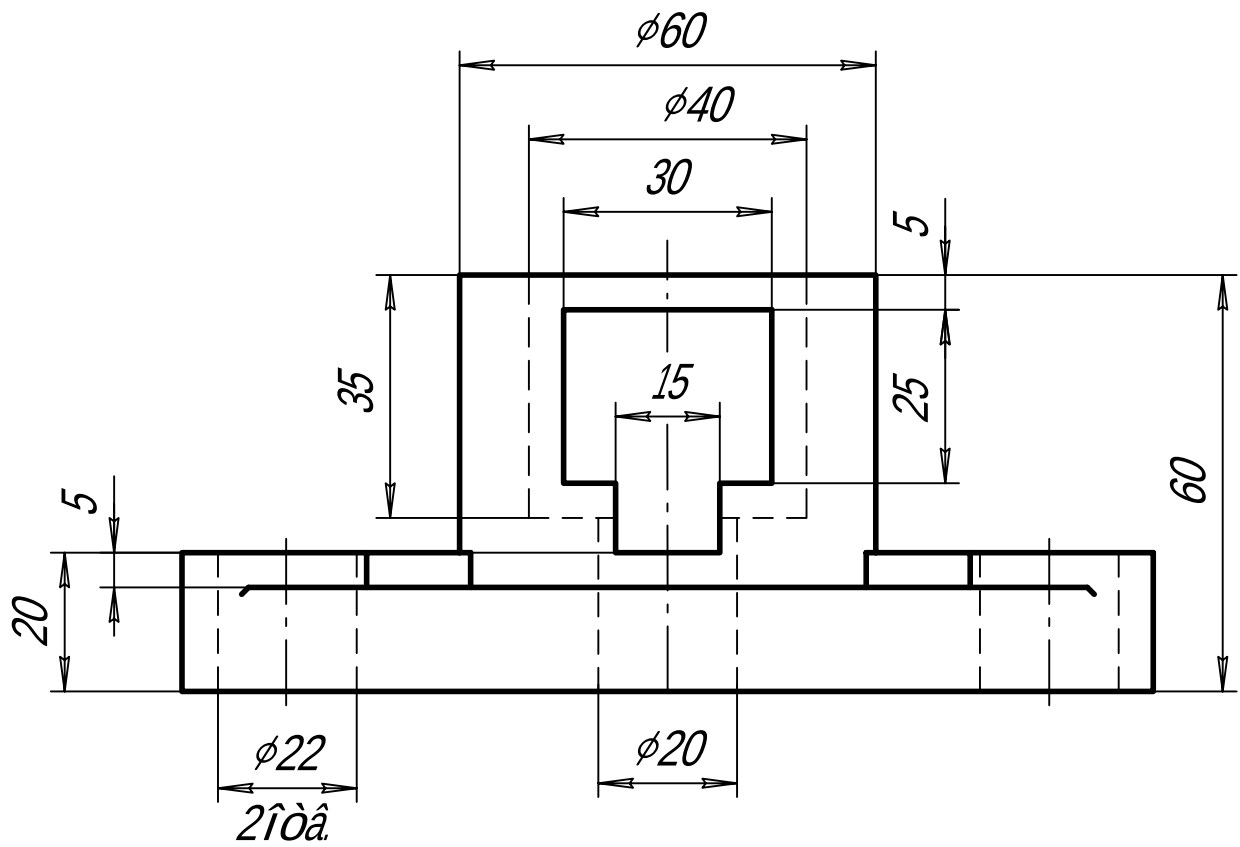


3T.26



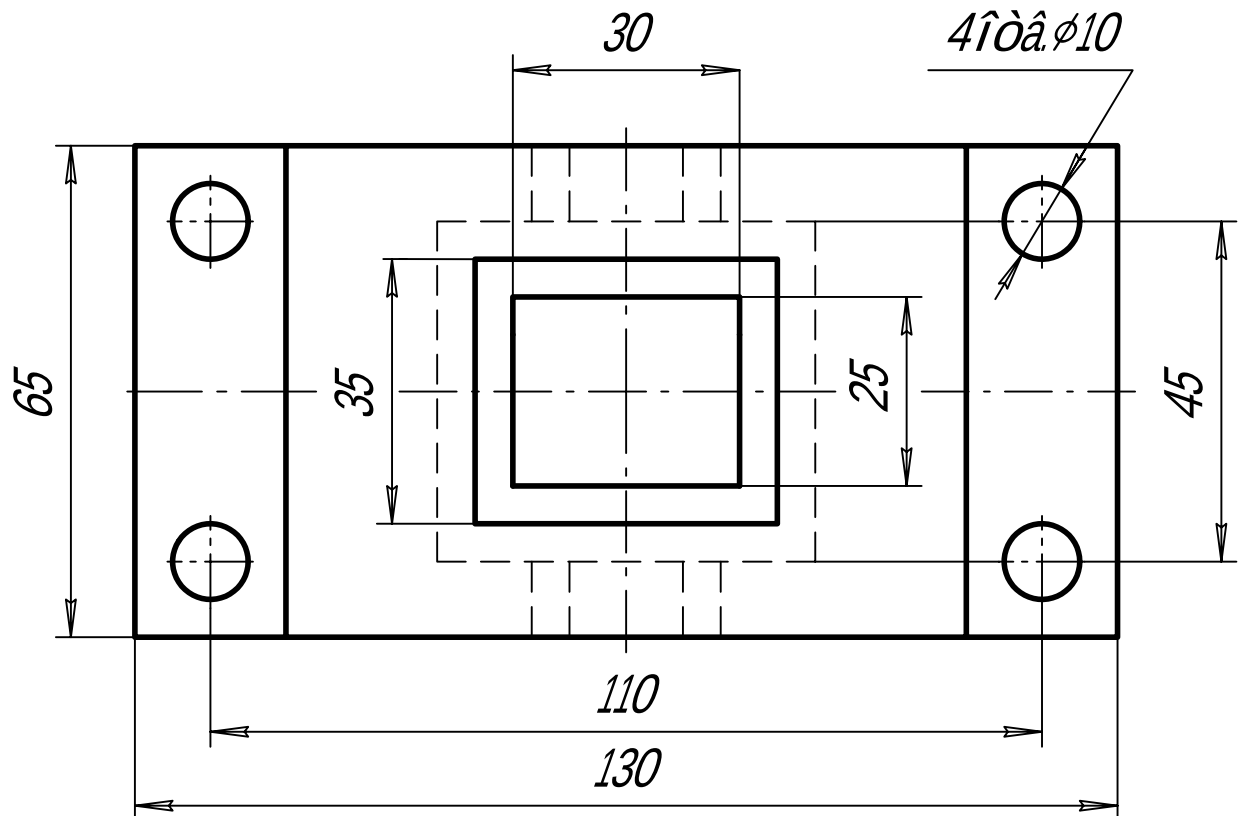
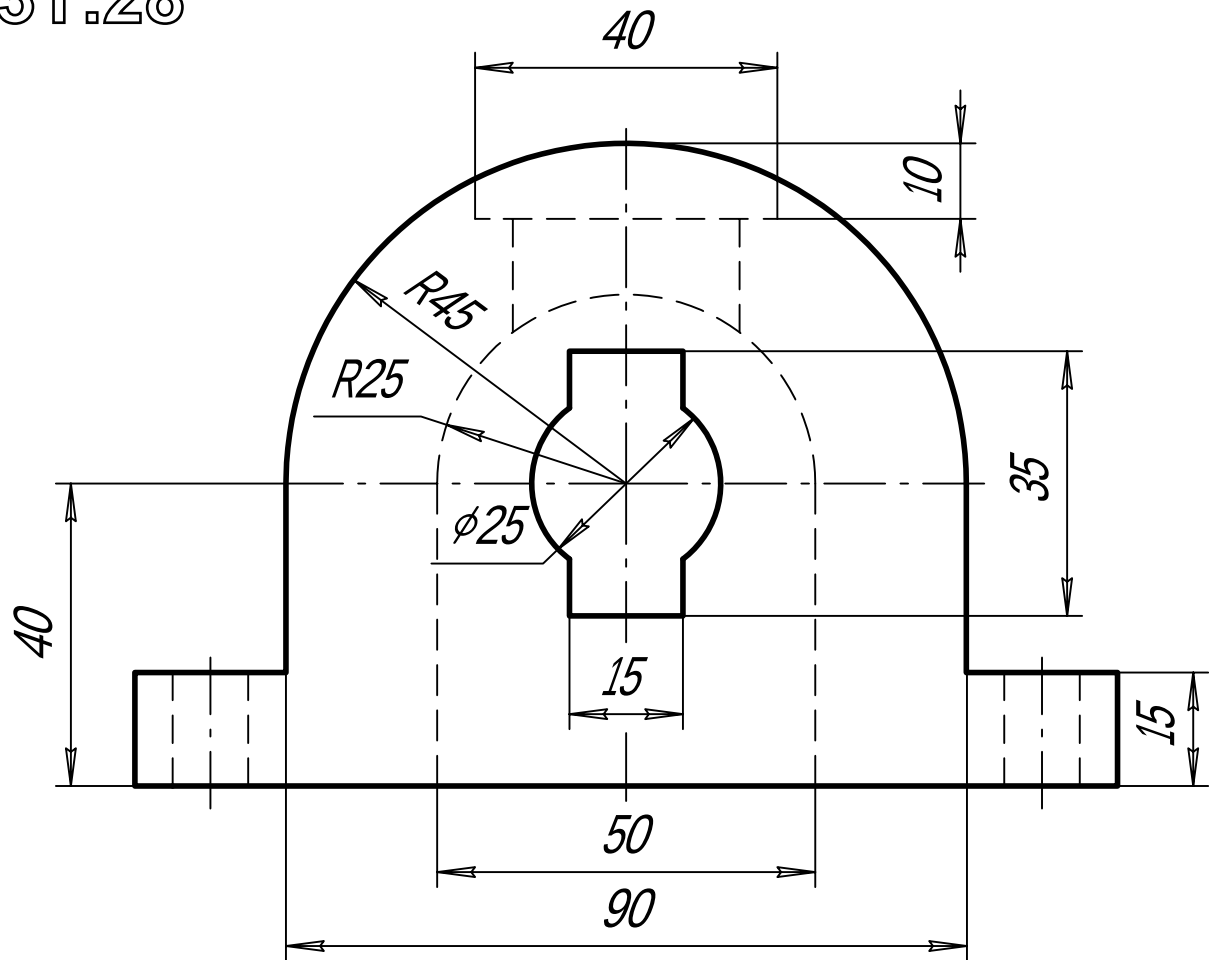


3T.27



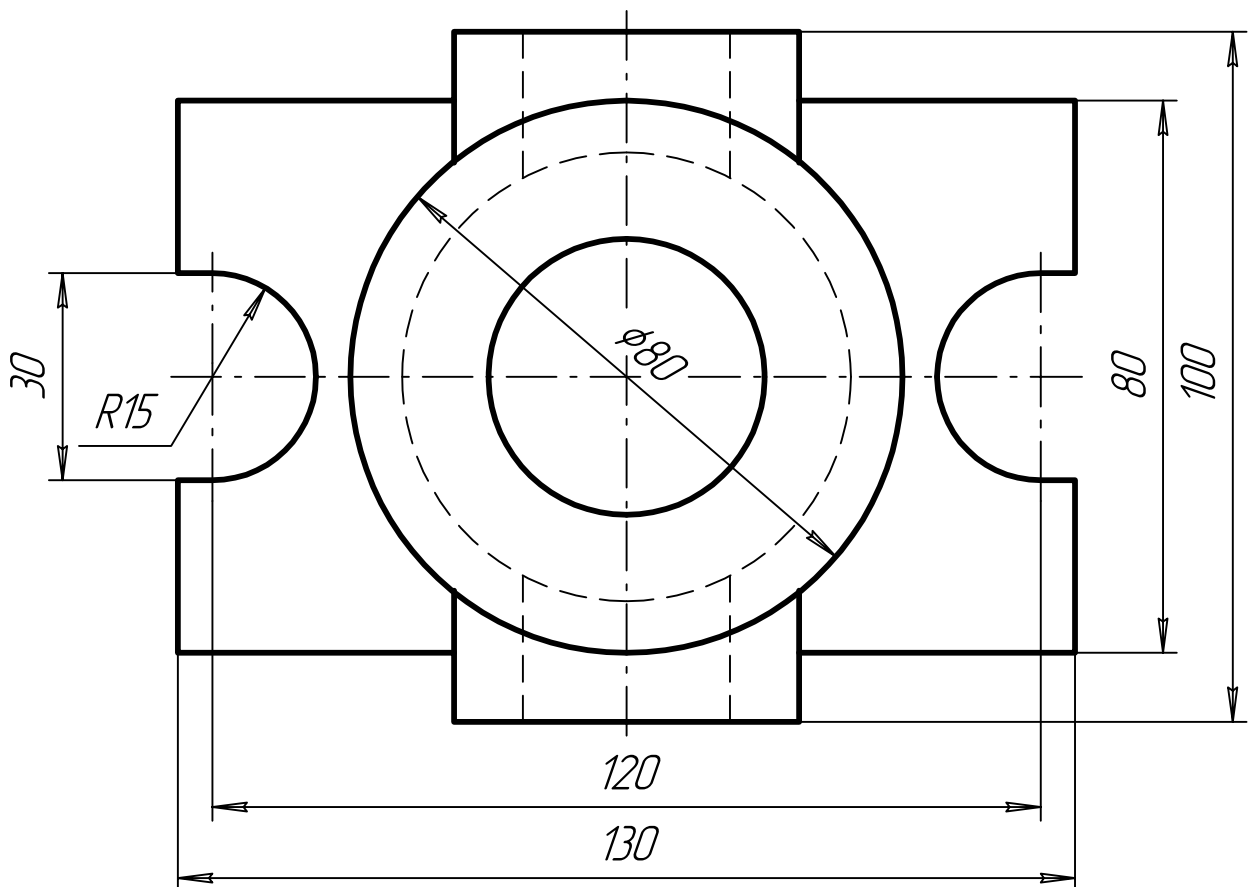
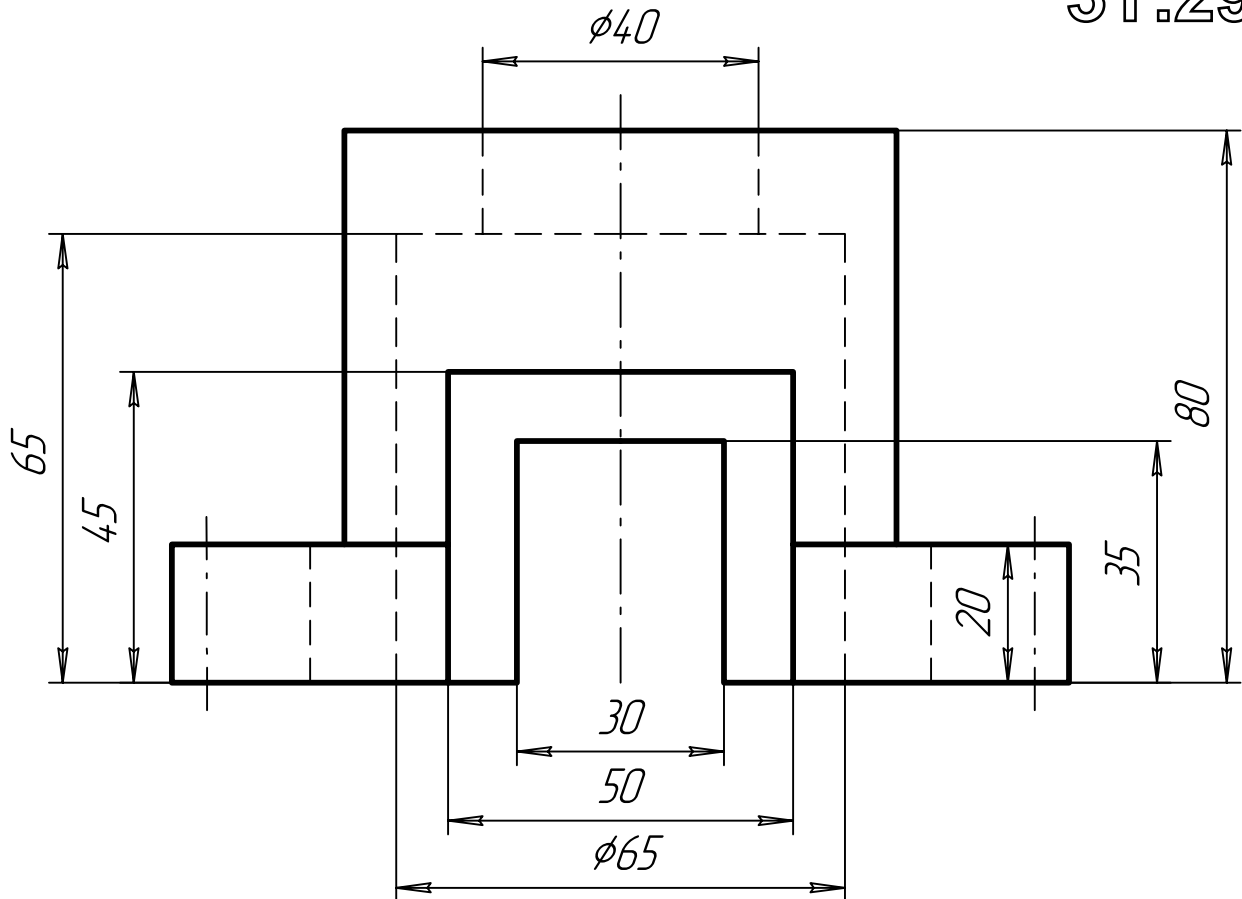


3T.28



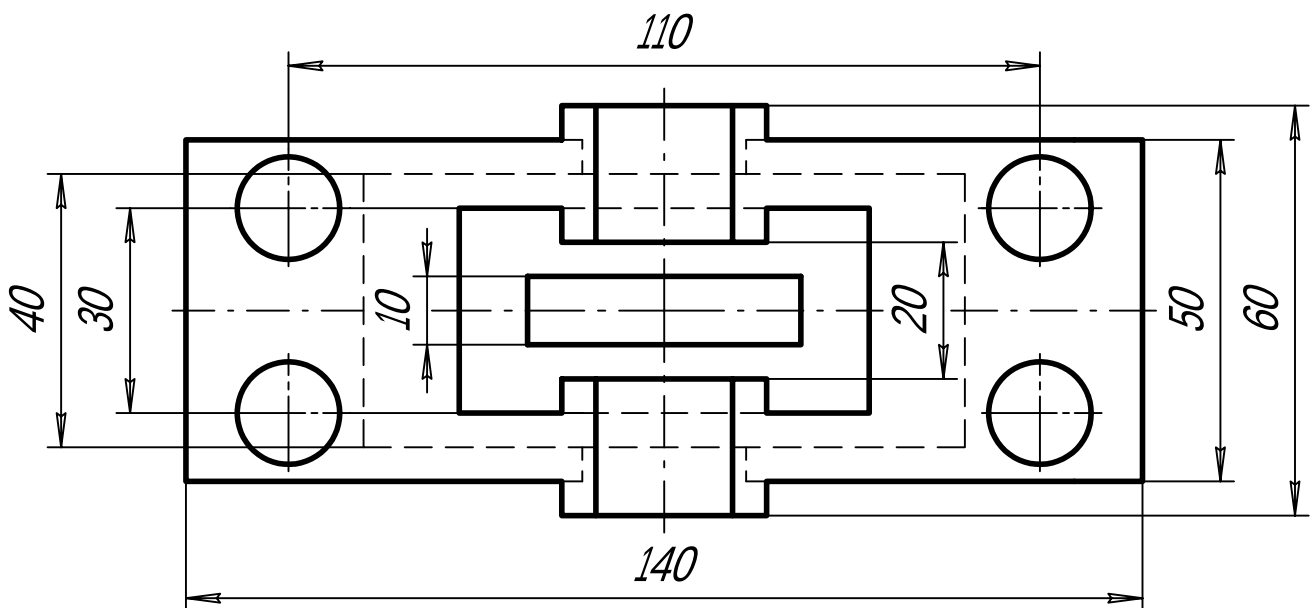
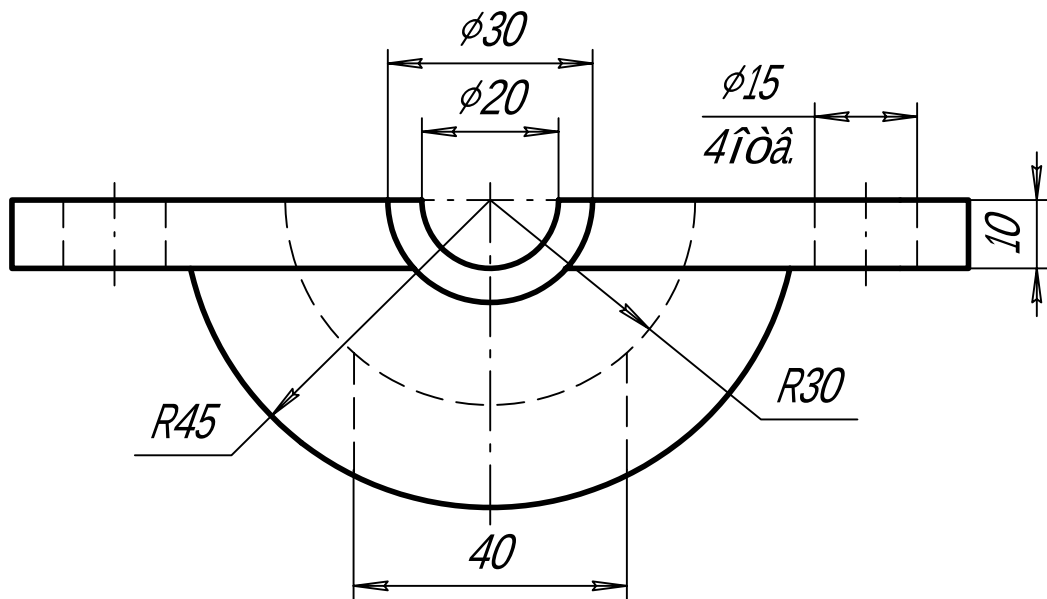


3T.29



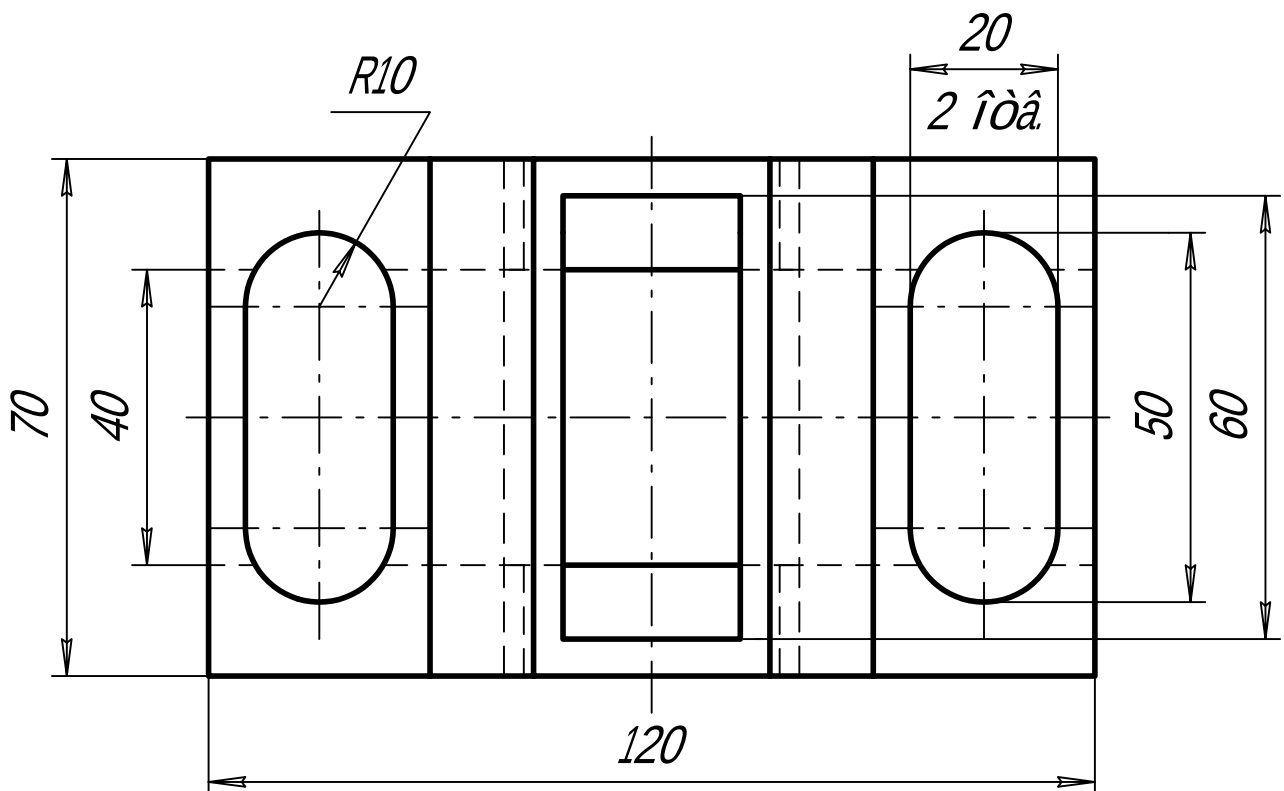
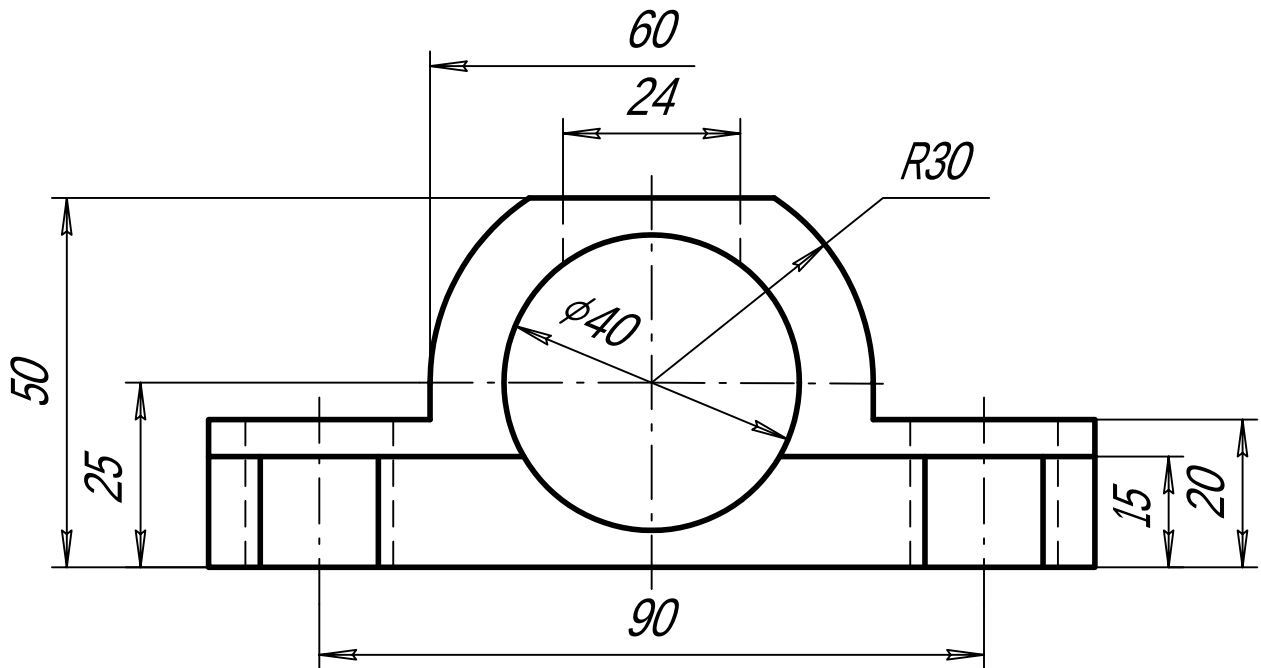


3T.30





3T.31



Technical drawing of a mechanical part, showing two views: a front view (top) and a top view (bottom).

Front View (Top):

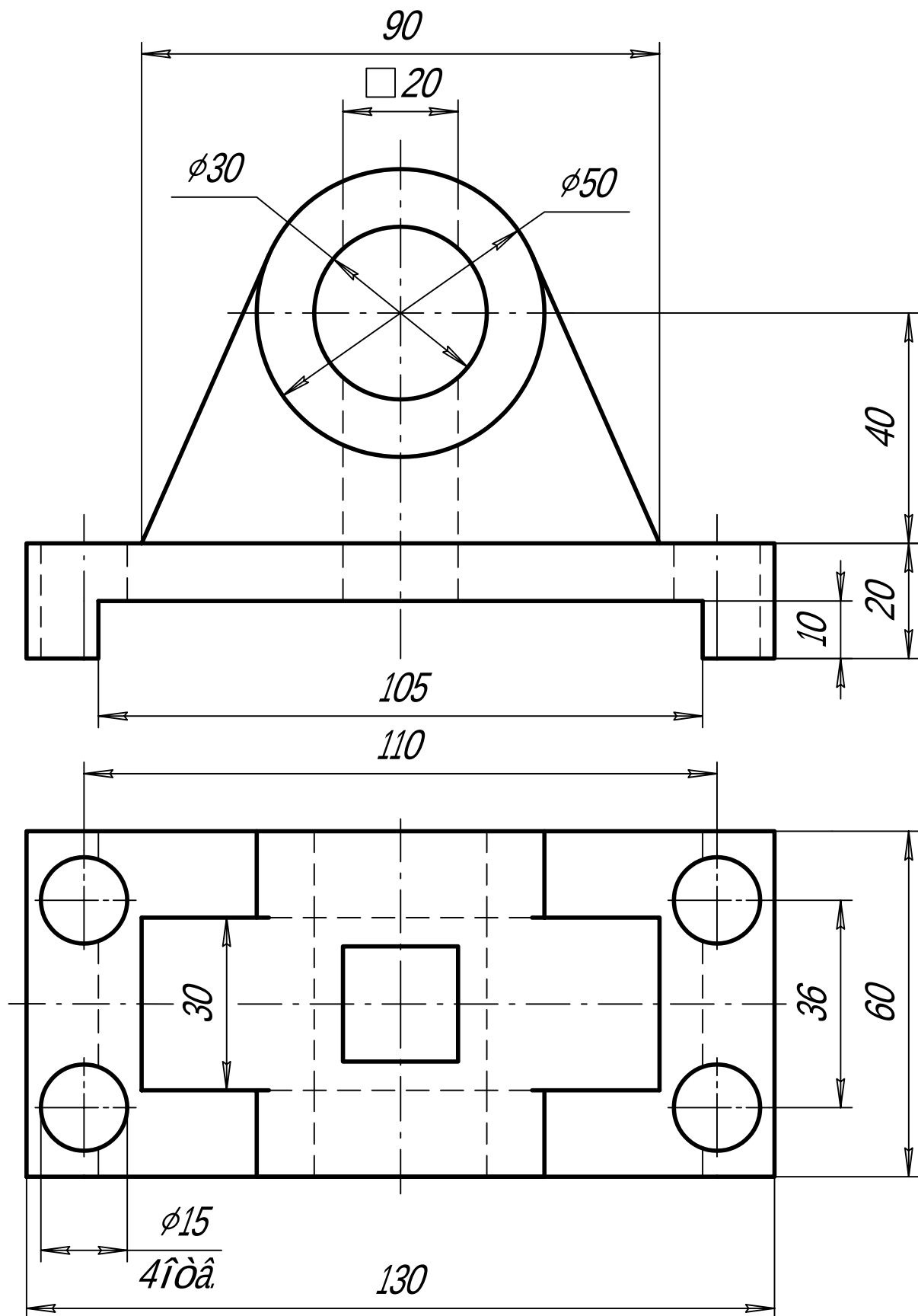
- Overall width: 130
- Overall height: 45
- Top feature: A semi-circular arc with a radius of $R35$ centered on the vertical axis.
- Central feature: A circular hole with a diameter of $\phi 30$.
- Bottom feature: A rectangular protrusion with a width of 60 and a height of 5.
- Internal features: Dashed lines indicate internal structure, including a central vertical slot and horizontal slots on the sides.
- Dimension lines: 5 (height of bottom protrusion), 60 (width of bottom protrusion), 10 (height of internal slot), 30 (height of top section), 45 (total height).

Top View (Bottom):

- Overall width: 80
- Overall height: 75
- Central feature: A circular hole with a diameter of $\phi 30$.
- Side features: Semi-circular arcs on the left and right sides with a radius of $R18$.
- Internal features: Dashed lines indicate internal structure, including a central vertical slot and horizontal slots on the sides.
- Dimension lines: 44 (width of central section), 80 (total width), 50 (height of central section), 75 (total height).

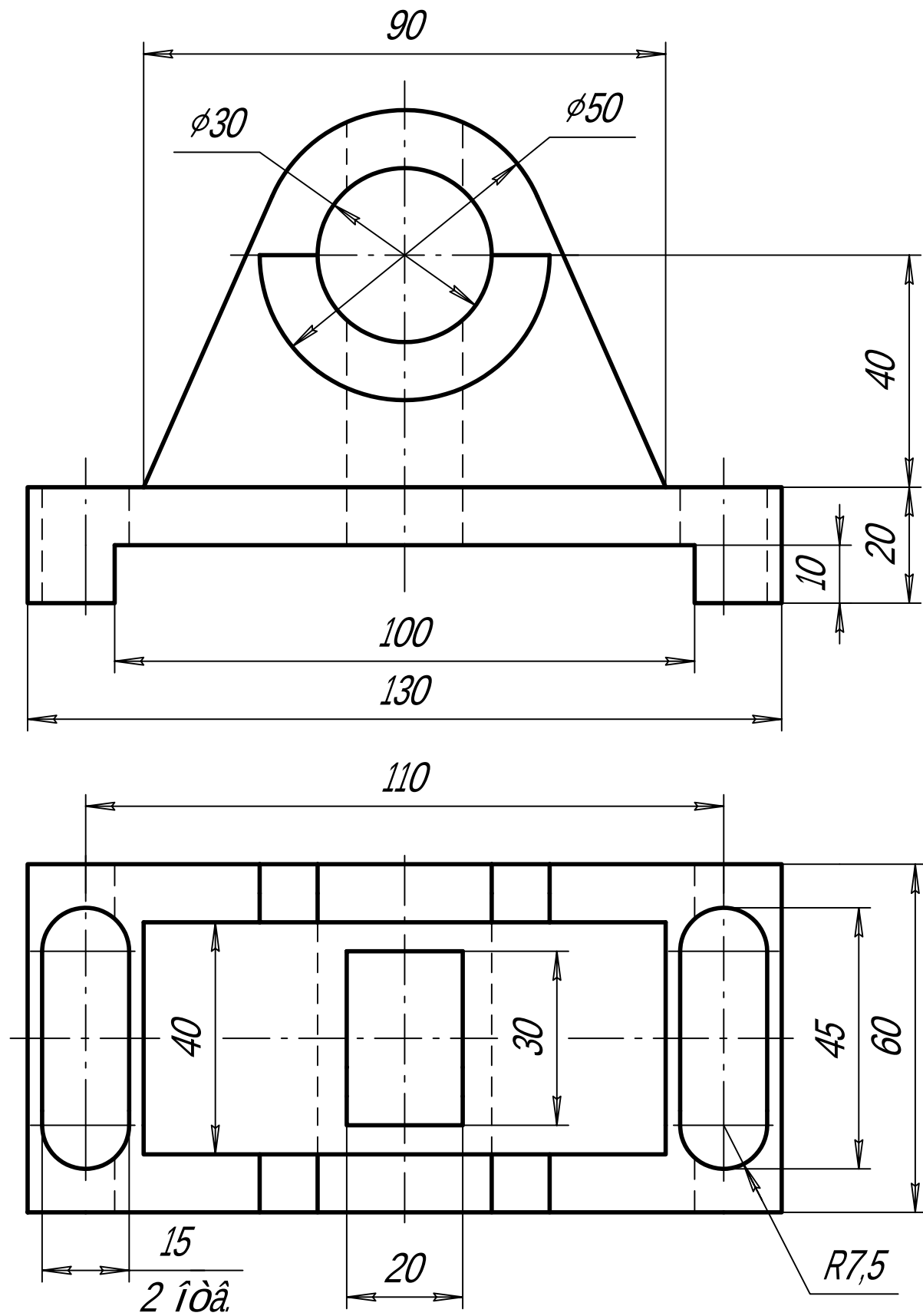


3T.33



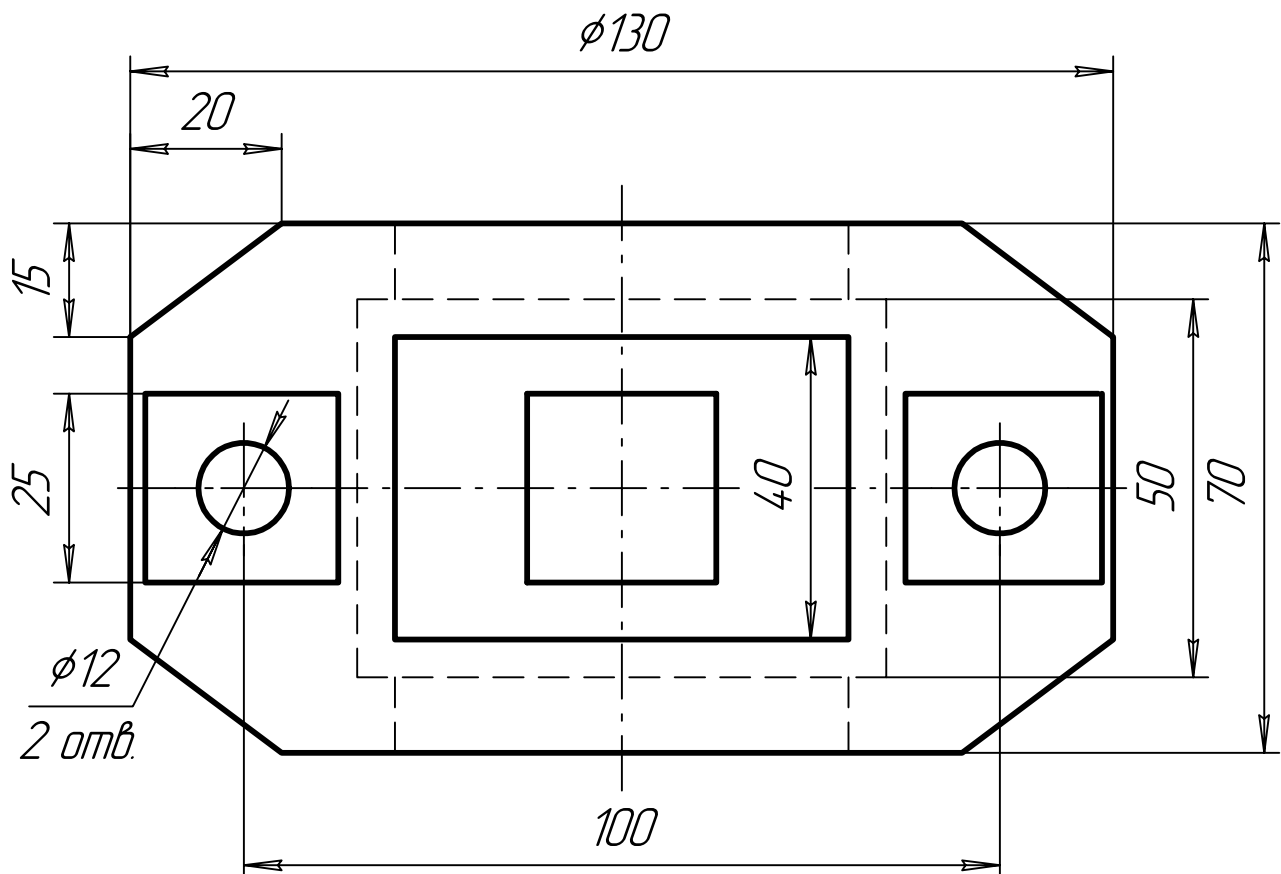
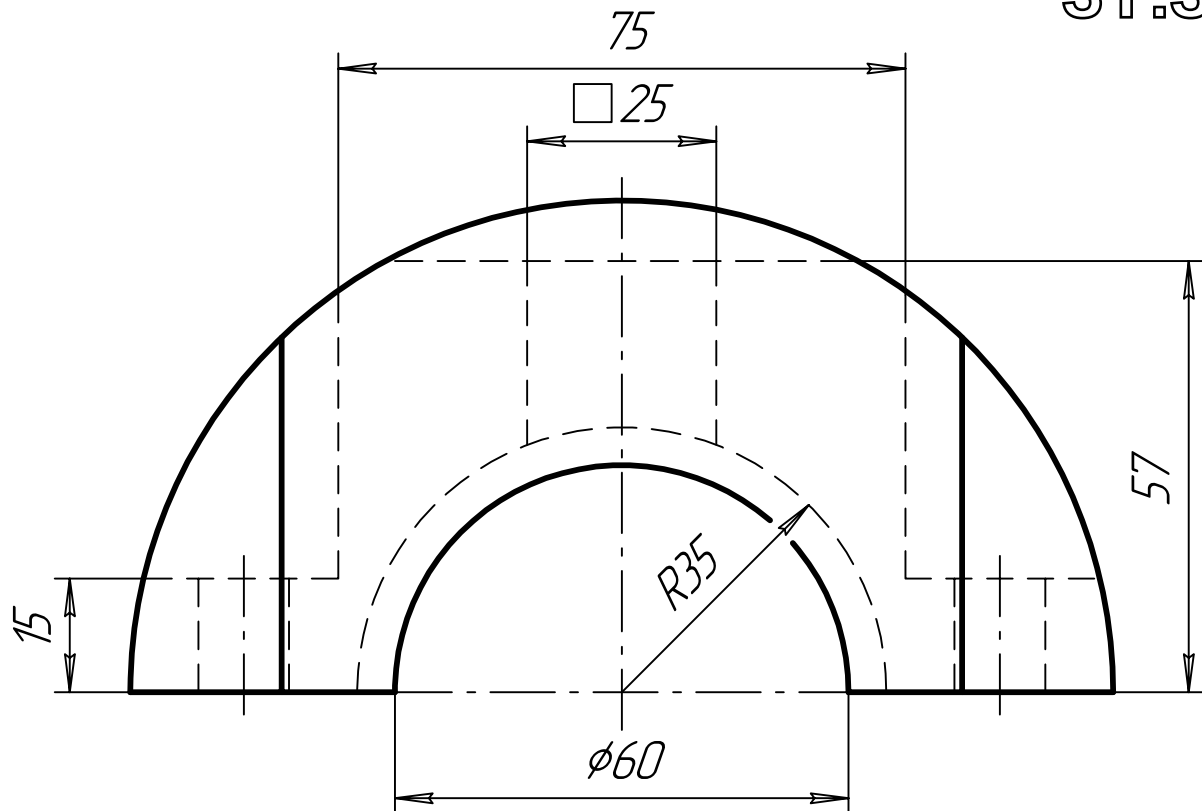


3T.34





3Т.35



The image displays a technical drawing of a mechanical component, consisting of a front view (top) and a top view (bottom).

Front View (Top):

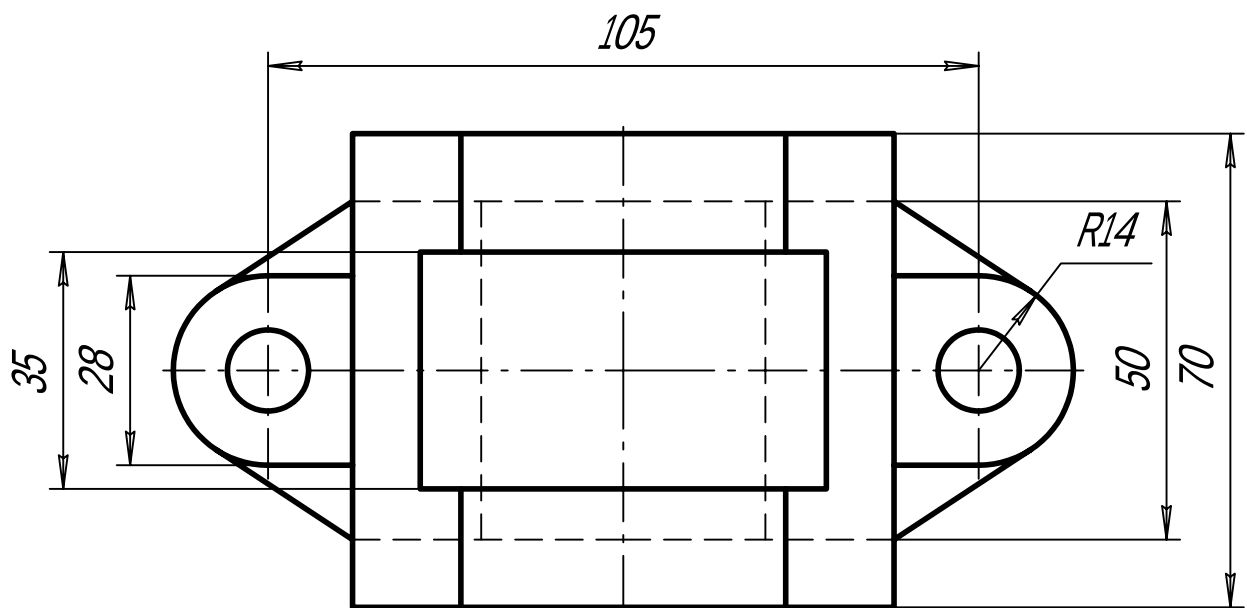
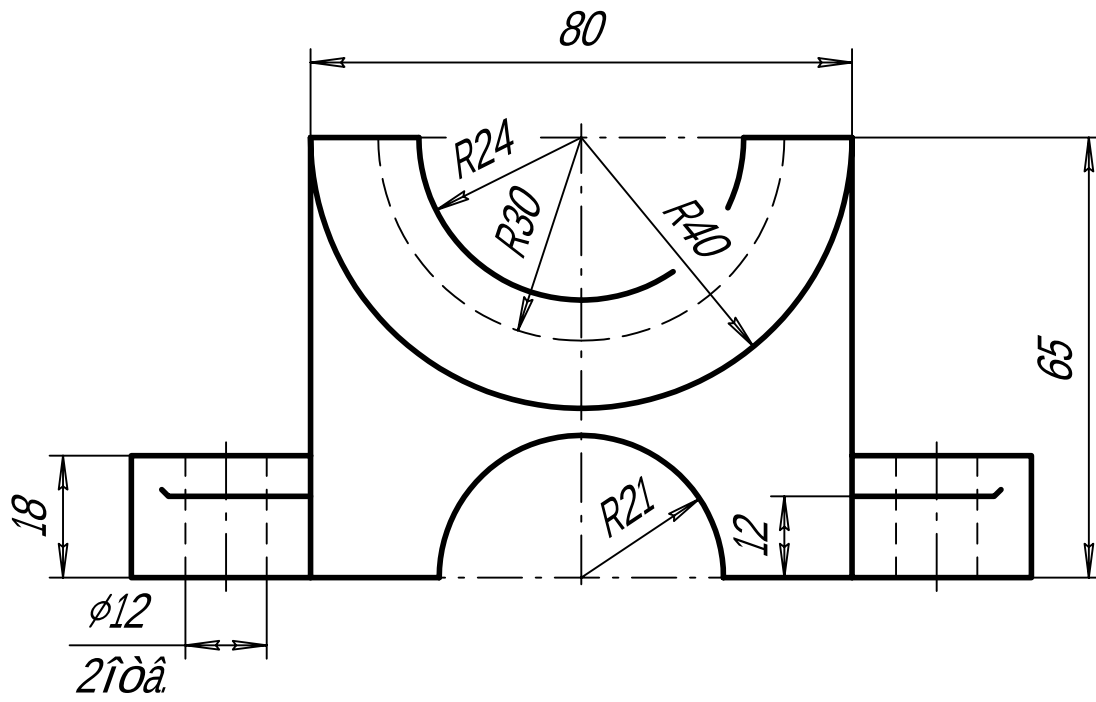
- The overall width is 130.
- The overall height is 110.
- The top section has a width of 50 and a height of 50.
- The bottom section has a width of 80 and a height of 30.
- The top section features a central vertical slot with a width of 15 and a height of 50.
- The top section has rounded corners with a radius of R25.
- The bottom section has rounded corners with a radius of R5.
- There are two circular holes in the top section, each with a diameter of $\phi 25$.
- There are two circular holes in the bottom section, each with a diameter of $\phi 15$.
- The distance between the centers of the two holes in the top section is 50.
- The distance between the centers of the two holes in the bottom section is 80.
- The distance from the center of the top hole to the center of the bottom hole is 50.
- The distance from the center of the top hole to the center of the bottom hole is 50.

Top View (Bottom):

- The overall width is 105.
- The overall height is 40.
- The top section has a width of 20 and a height of 30.
- The bottom section has a width of 30 and a height of 30.
- The top section has rounded corners with a radius of R25.
- The bottom section has rounded corners with a radius of R5.
- There are two circular holes in the top section, each with a diameter of $\phi 25$.
- There are two circular holes in the bottom section, each with a diameter of $\phi 15$.
- The distance between the centers of the two holes in the top section is 50.
- The distance between the centers of the two holes in the bottom section is 80.
- The distance from the center of the top hole to the center of the bottom hole is 50.
- The distance from the center of the top hole to the center of the bottom hole is 50.

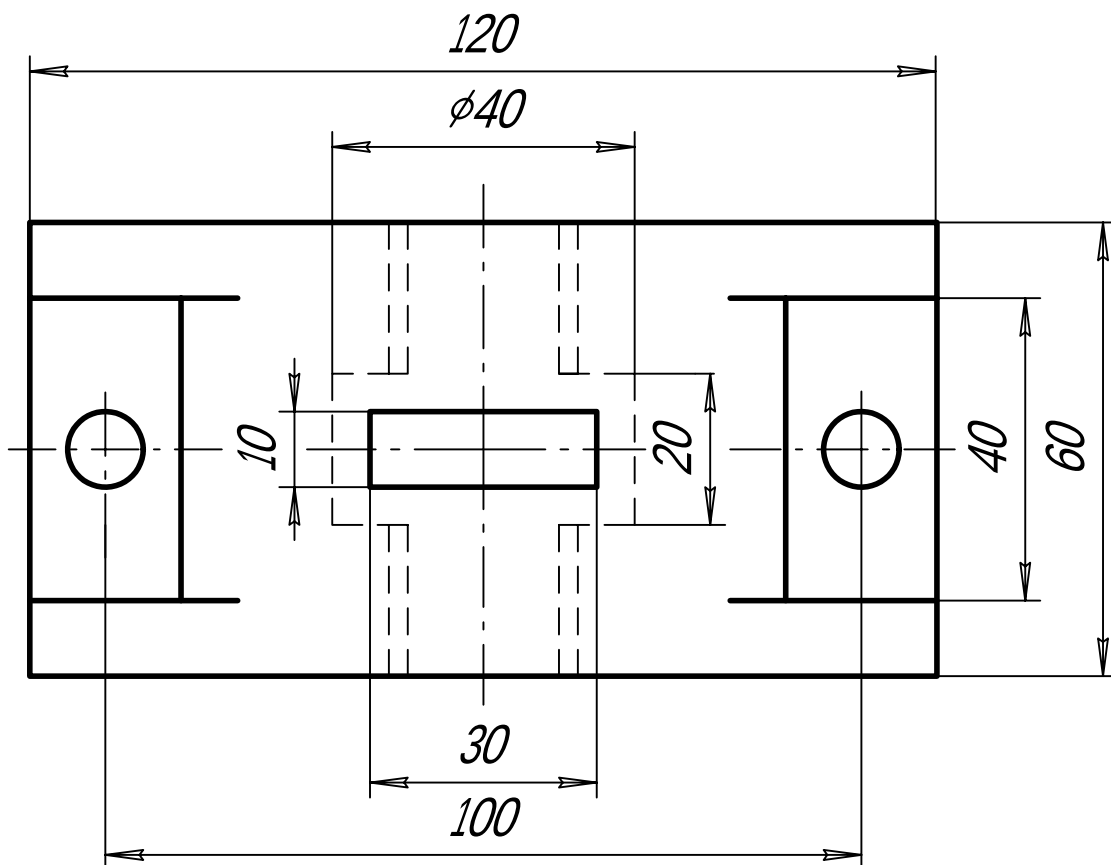
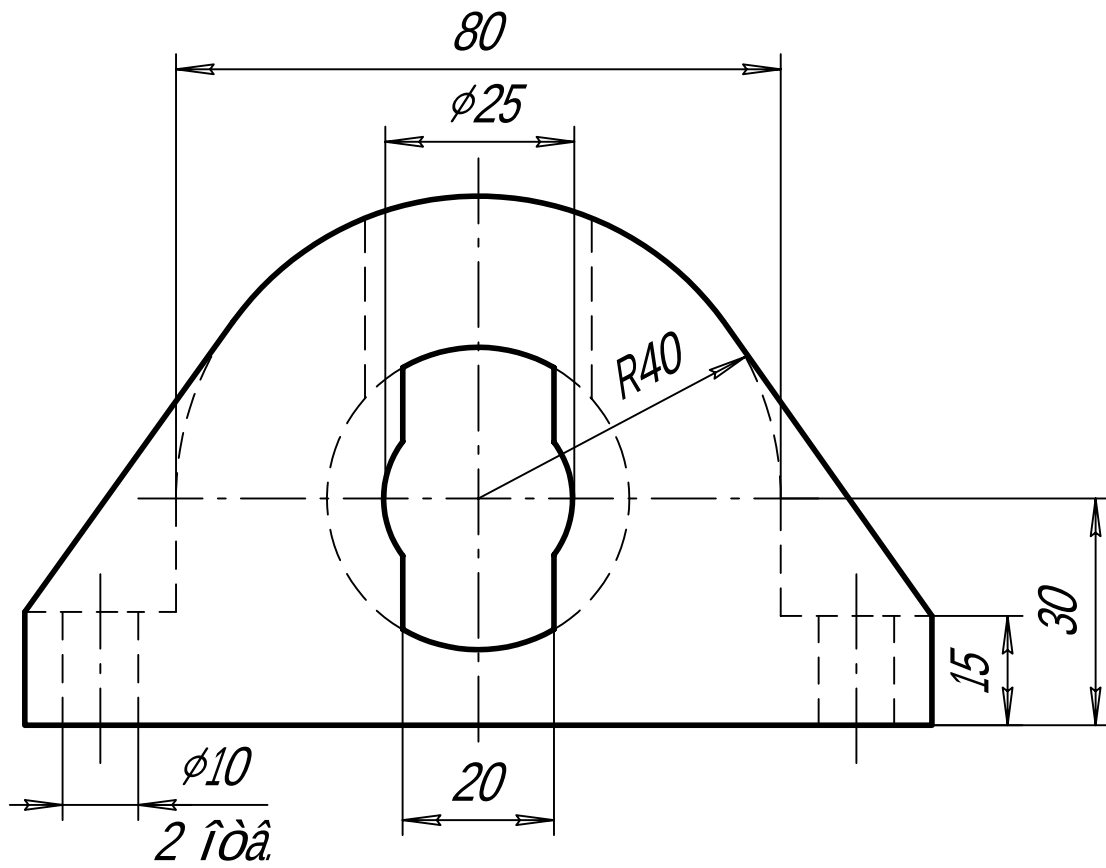


3T.37



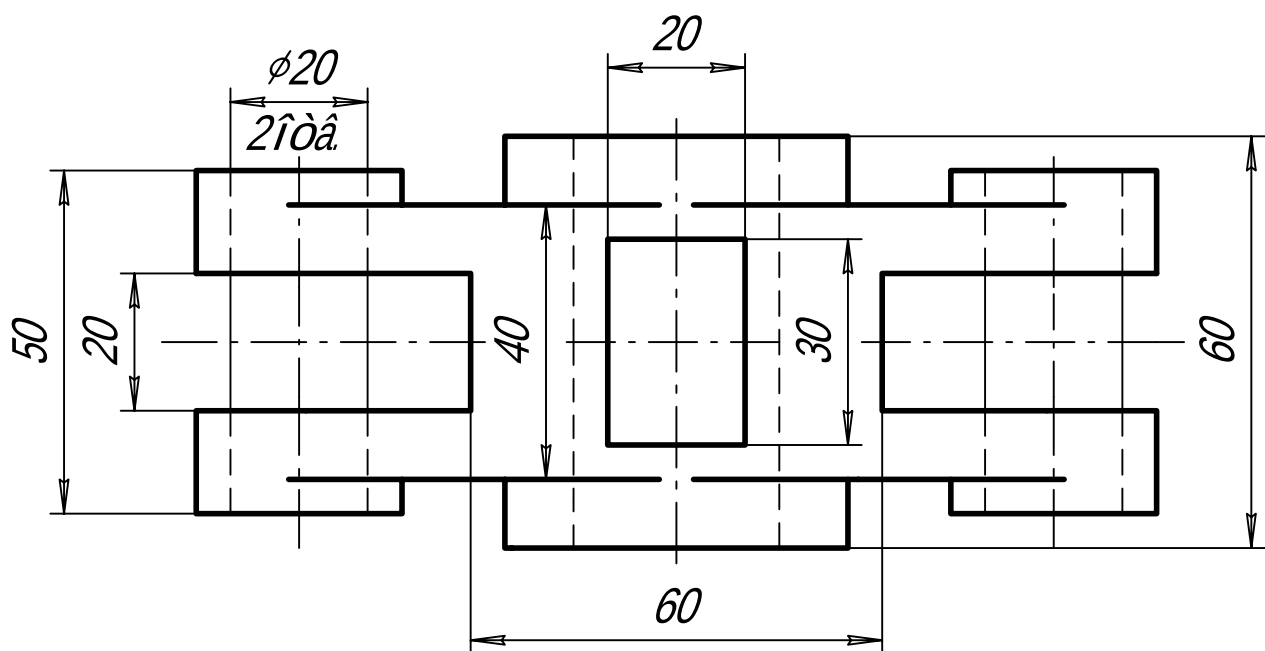
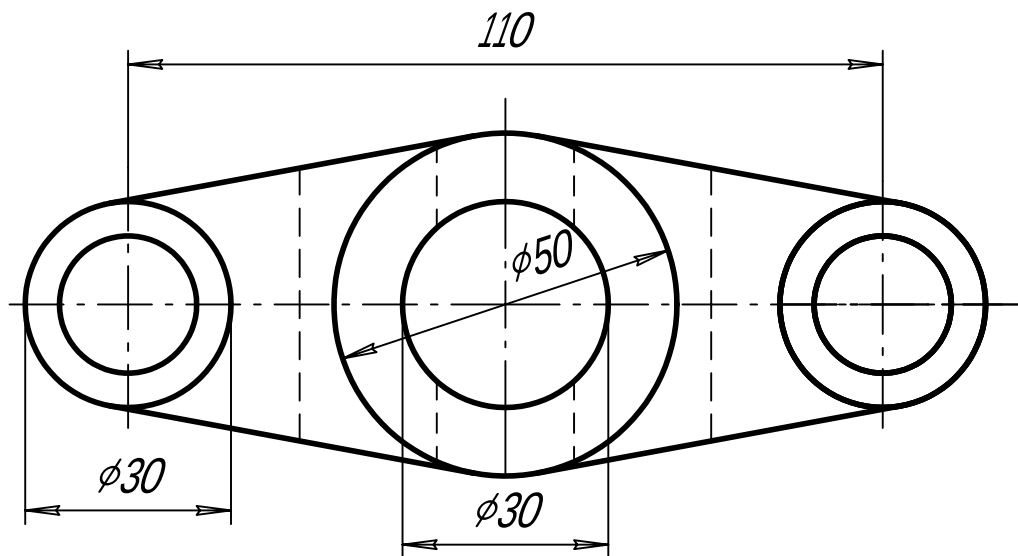


3T.38



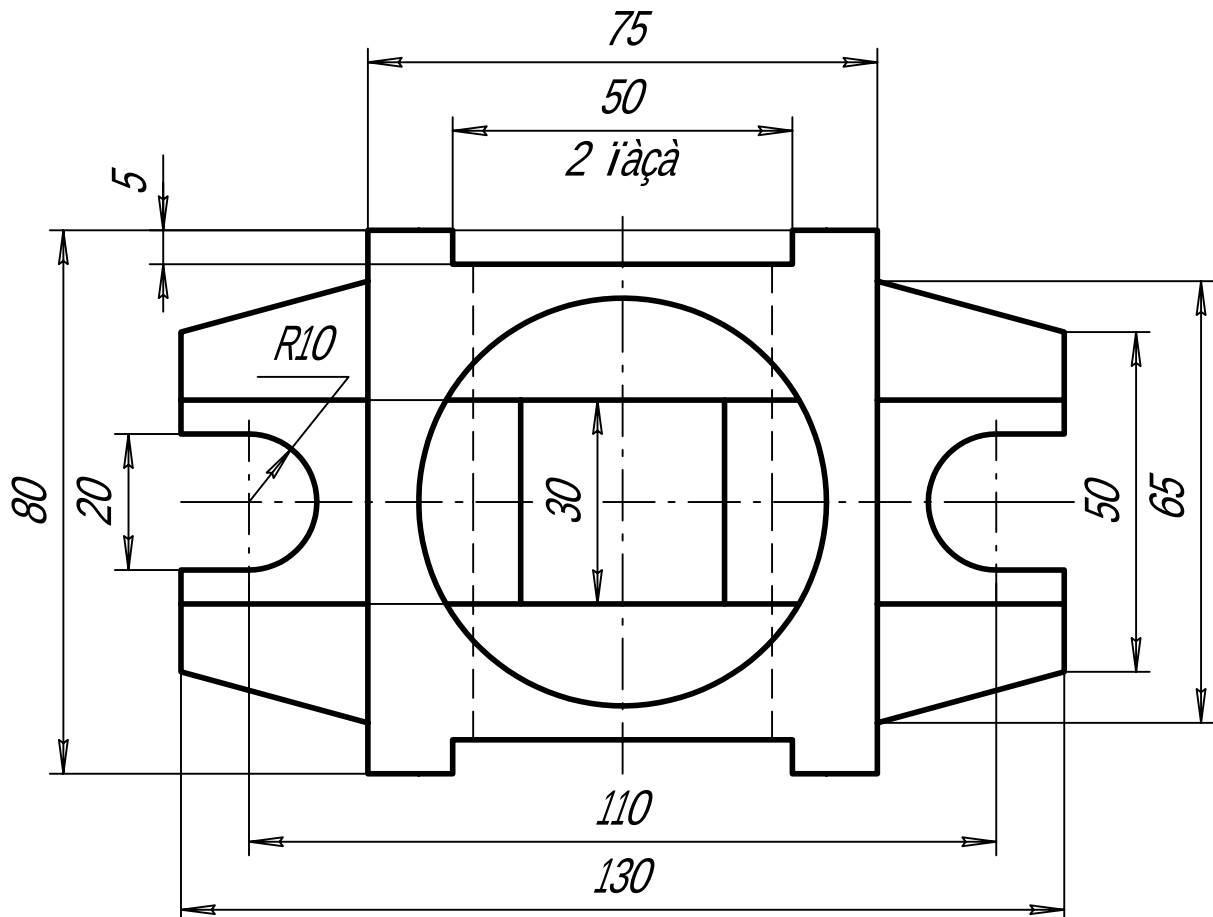
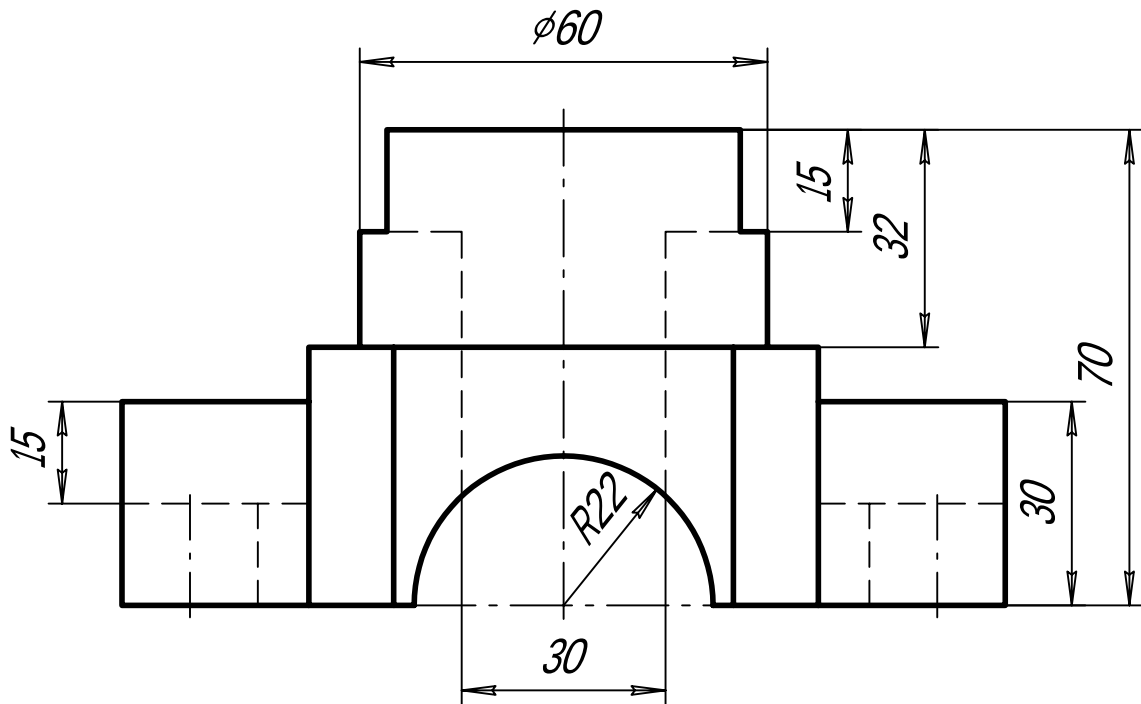


3T.39



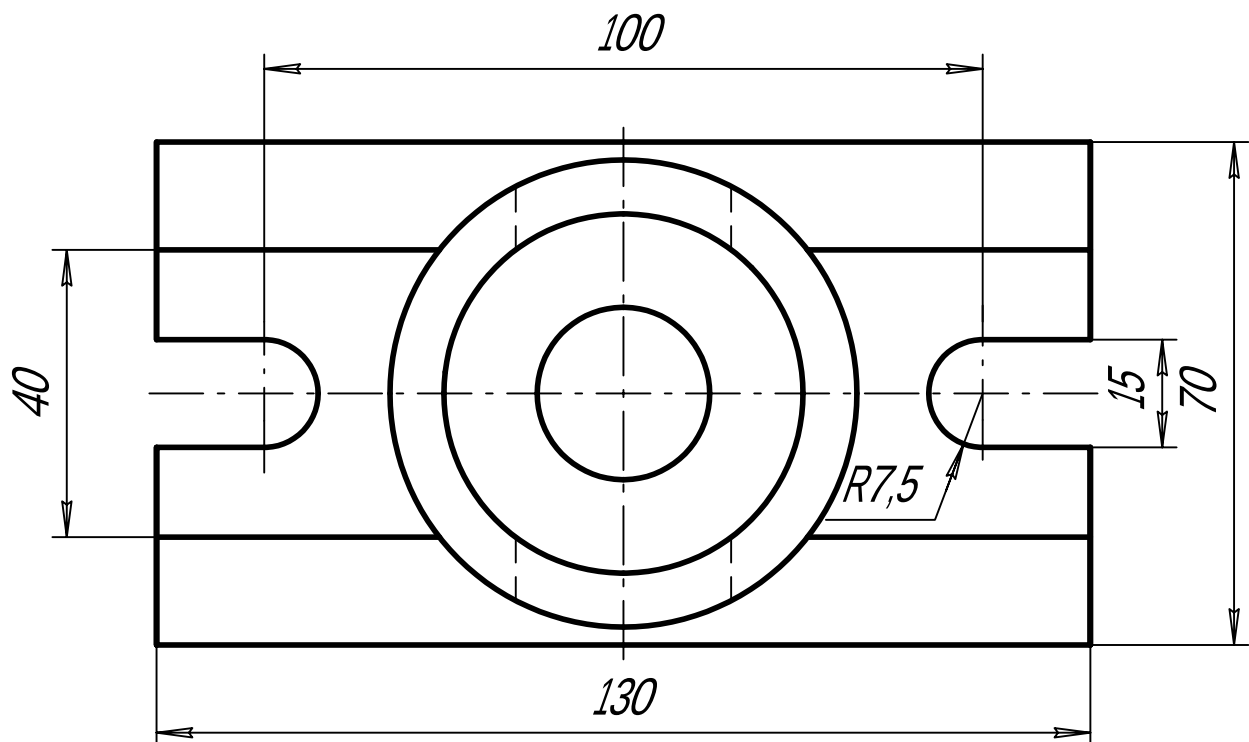
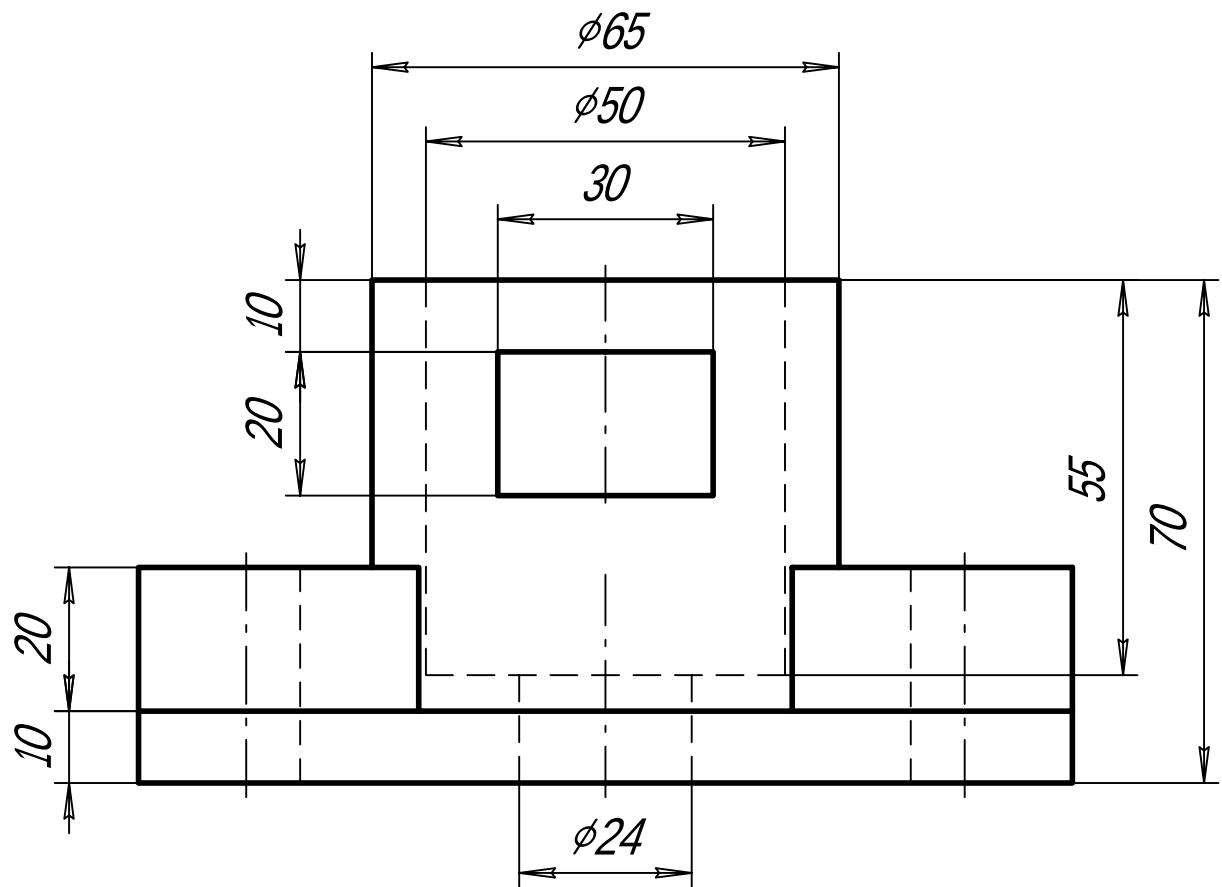


3T.40



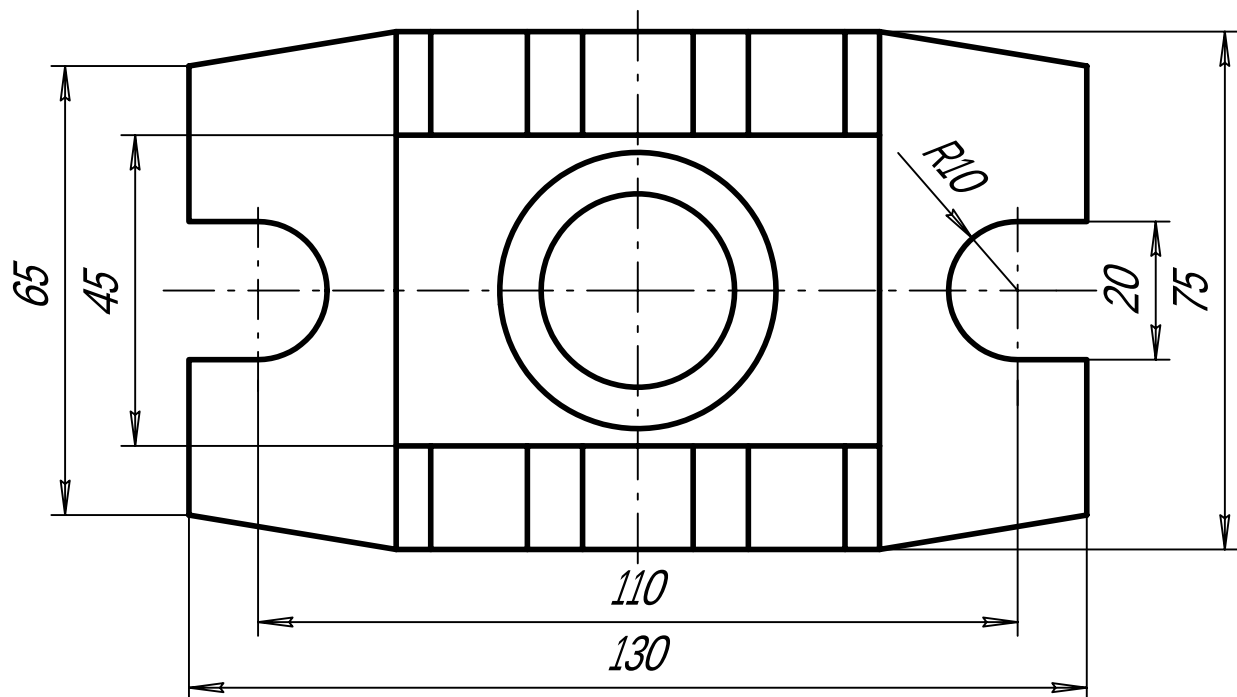
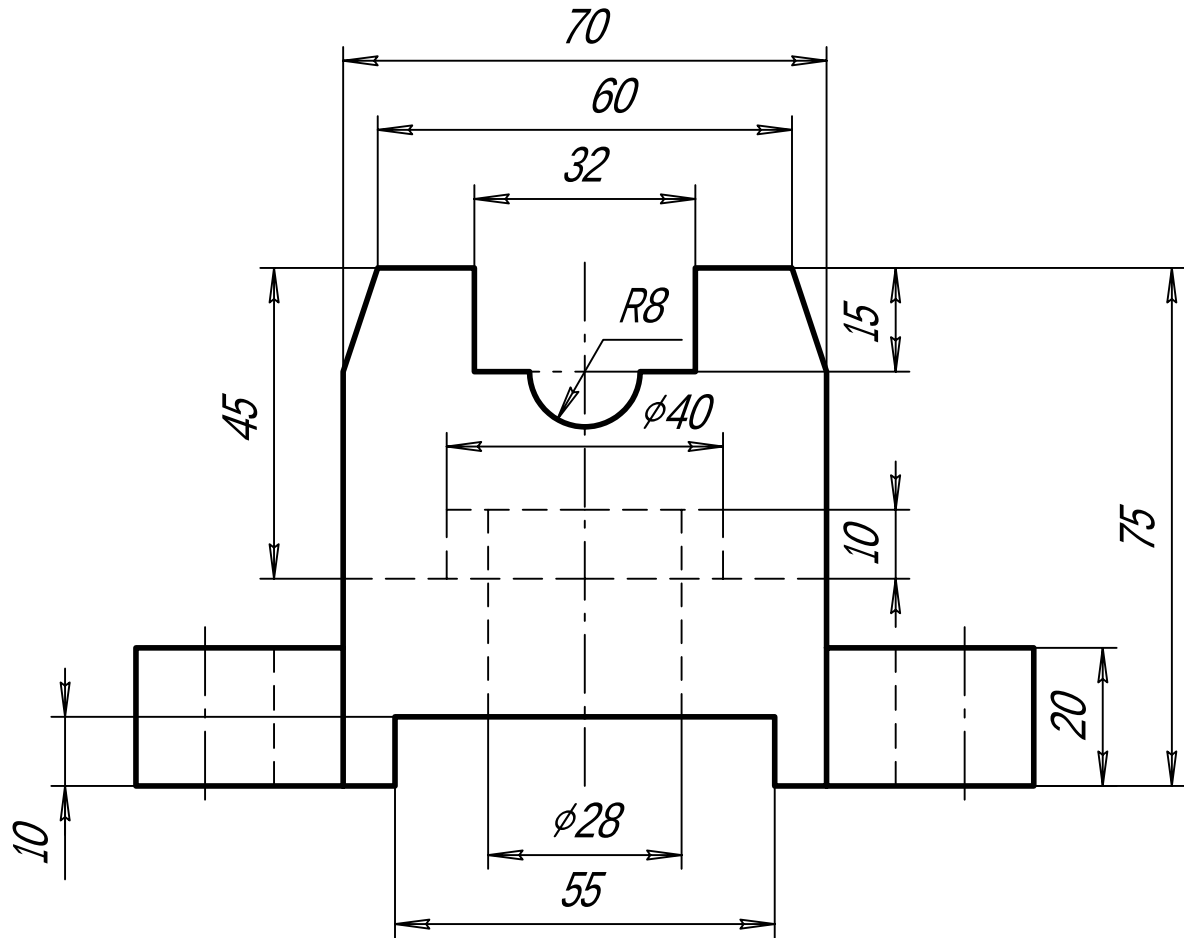


3T.41



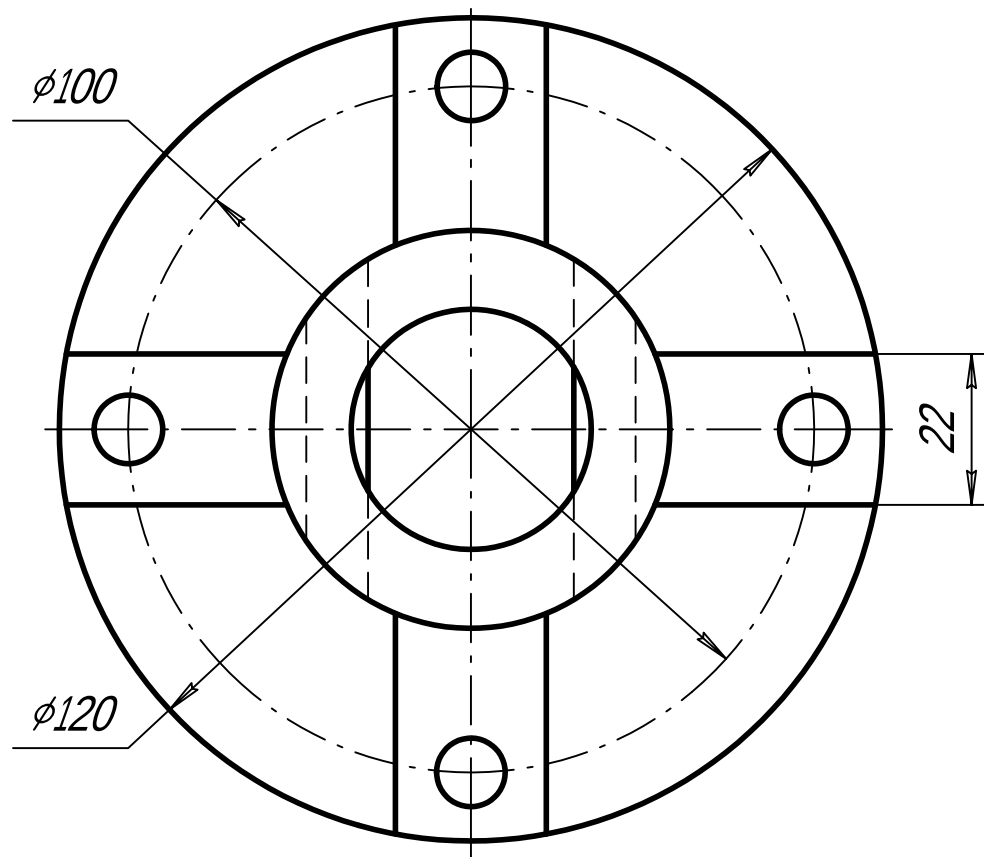
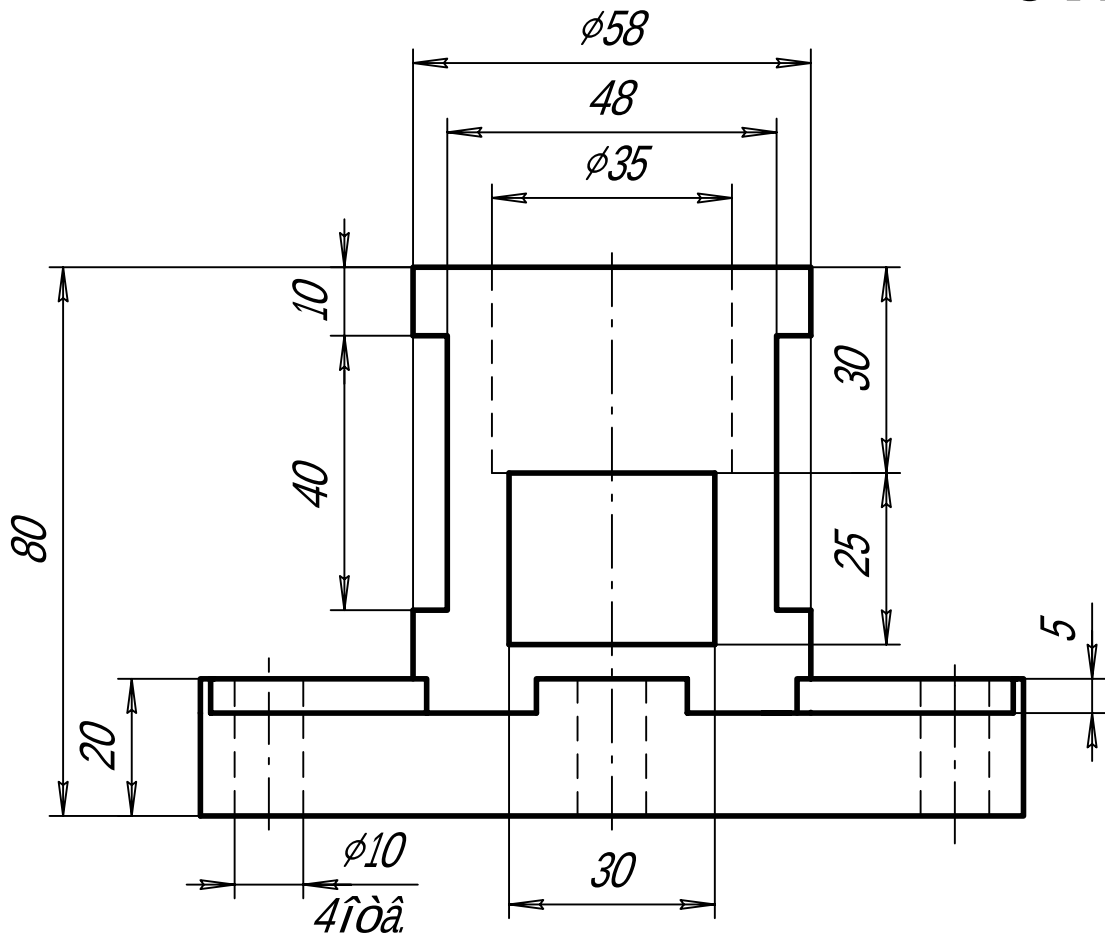


3T.42



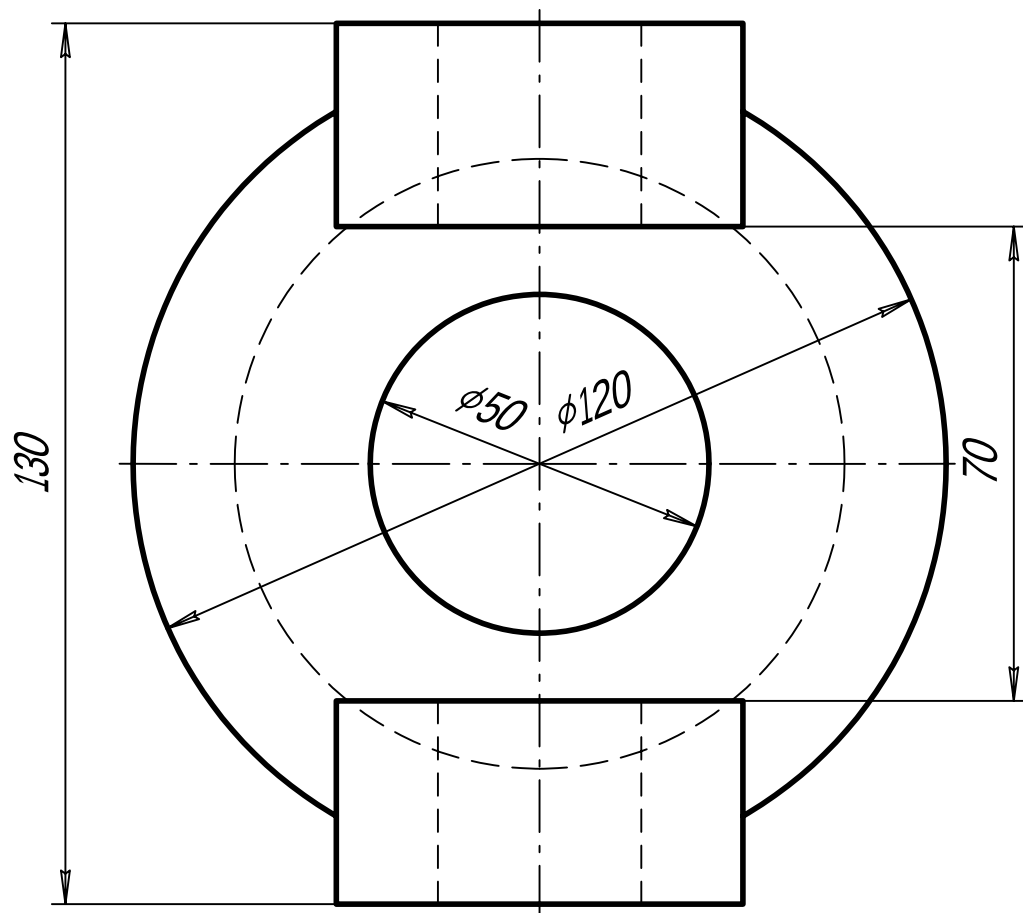
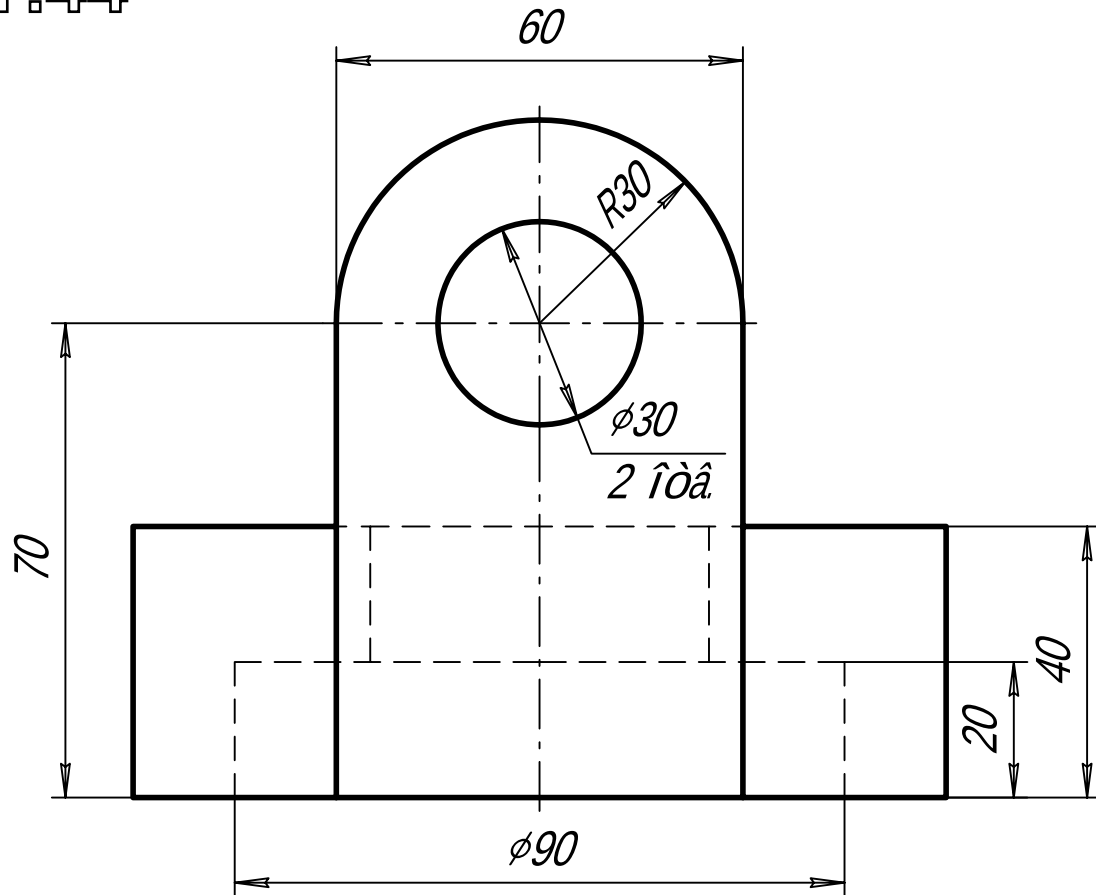


3T.43



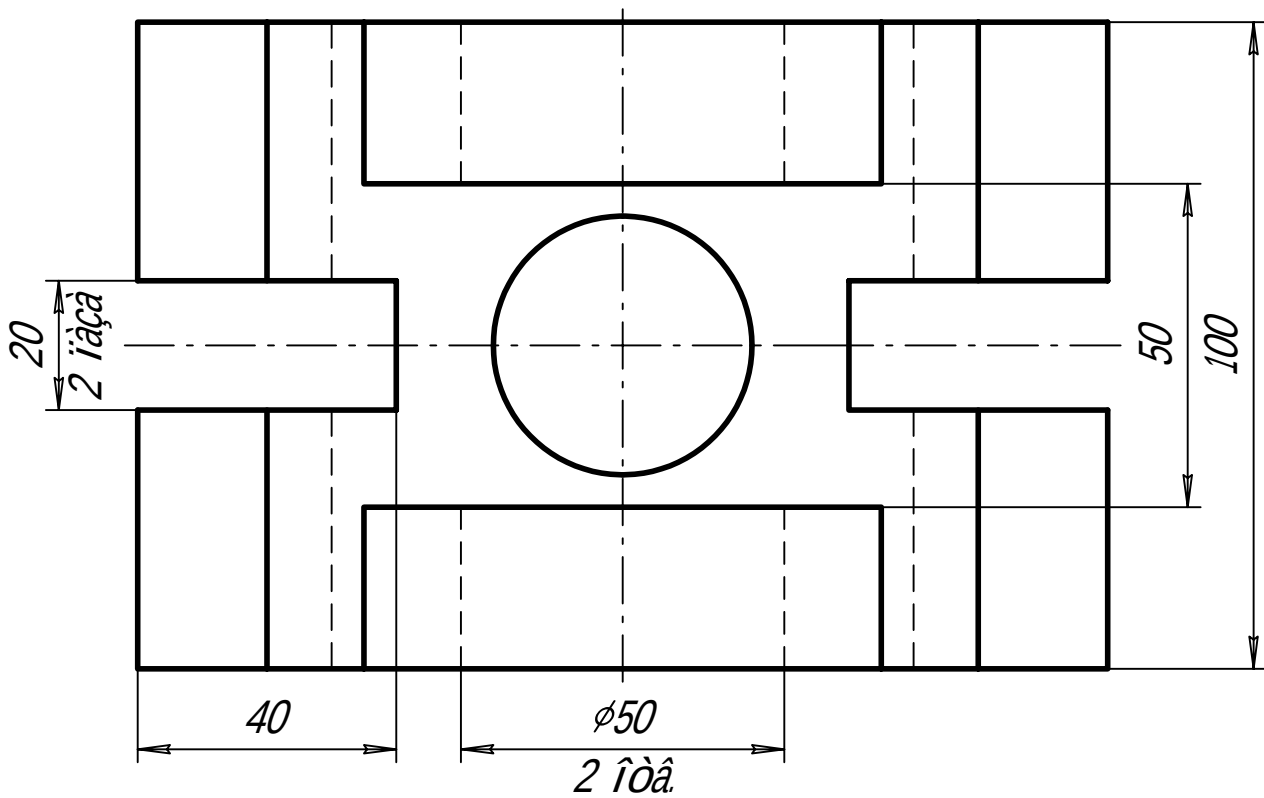
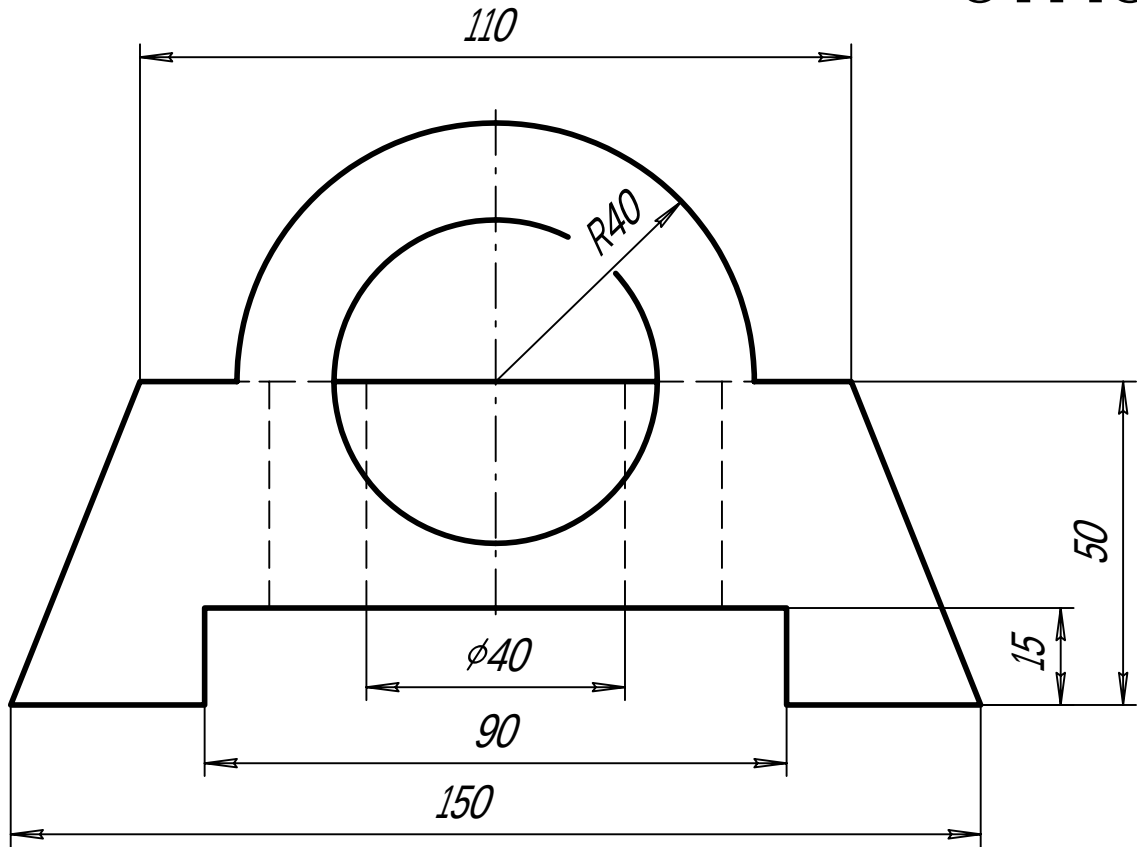


3T.44

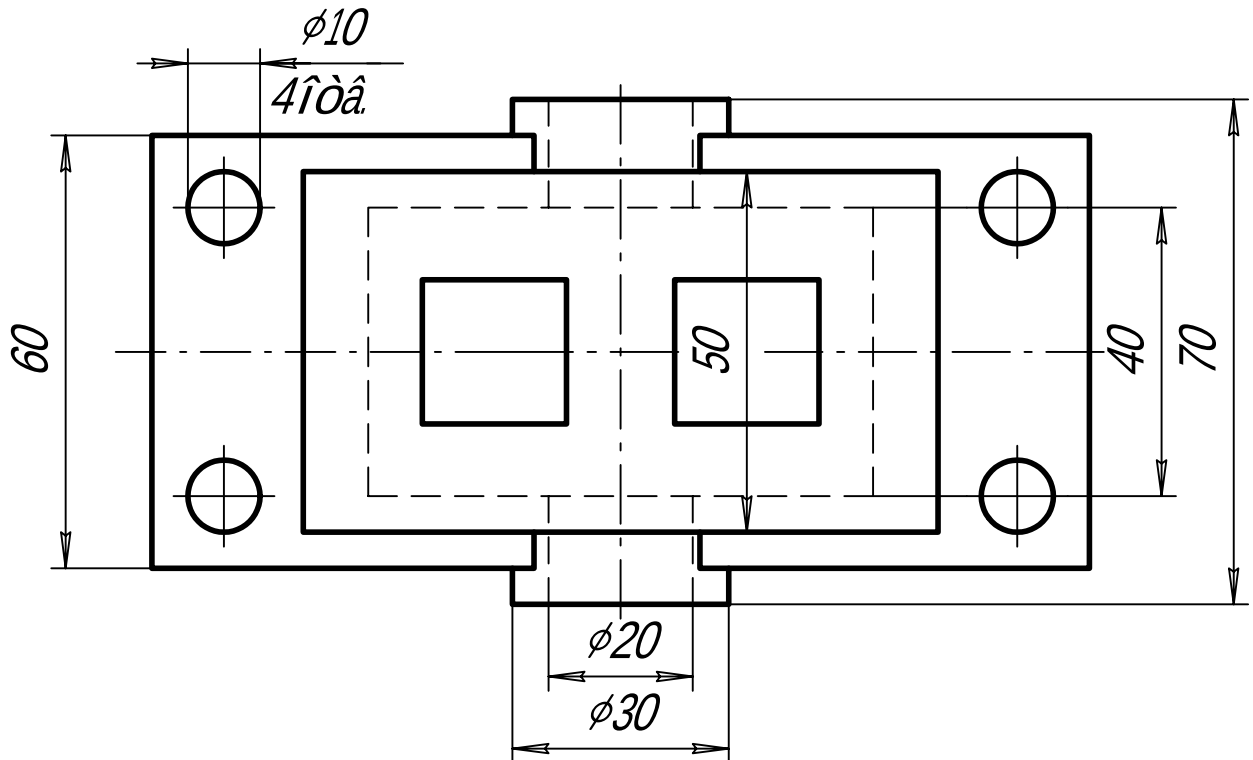
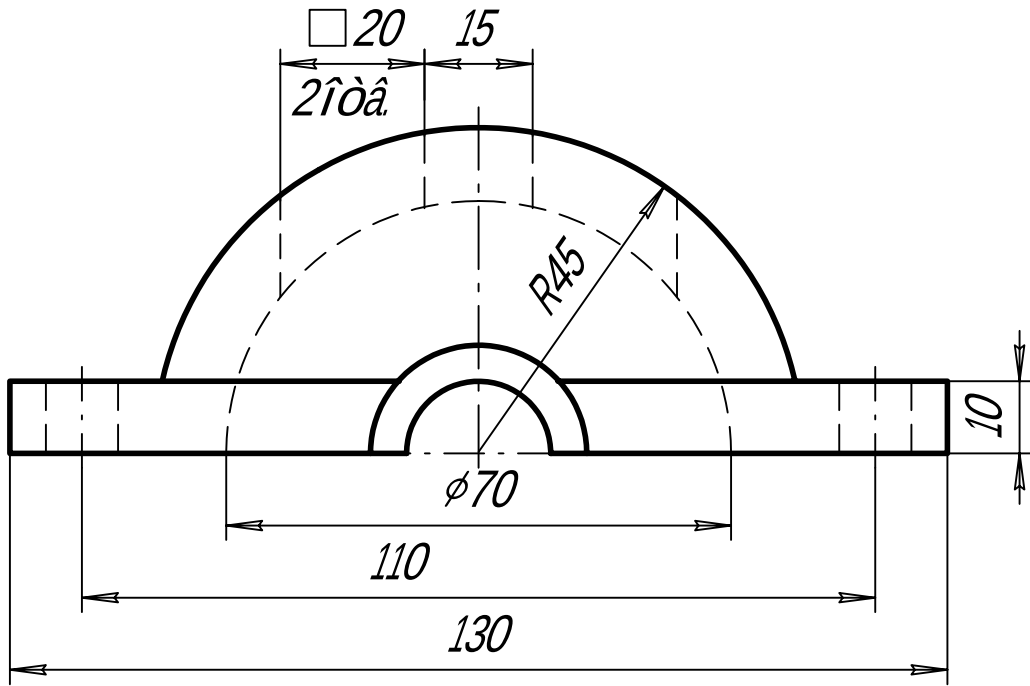




3T.45

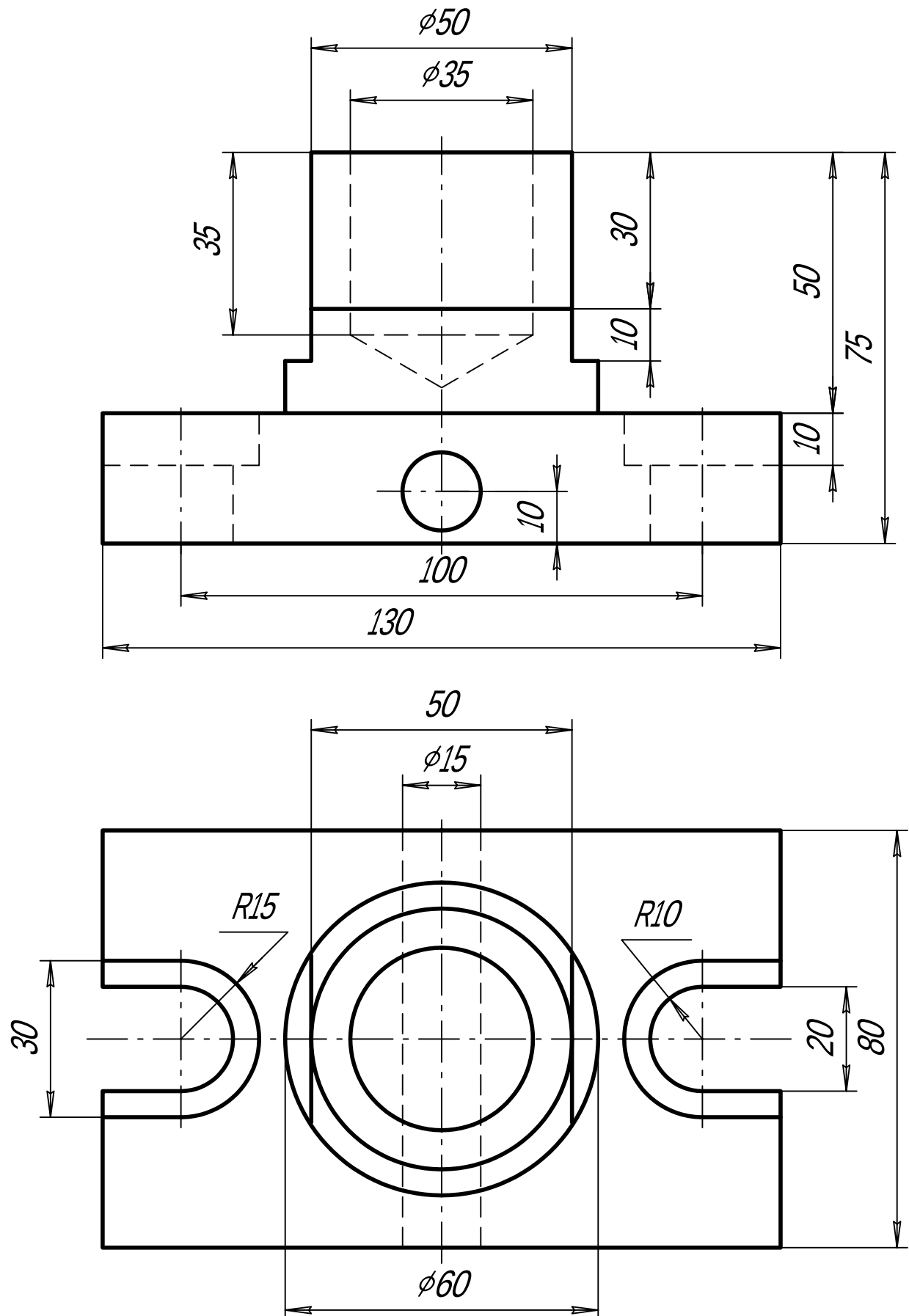


3T.46

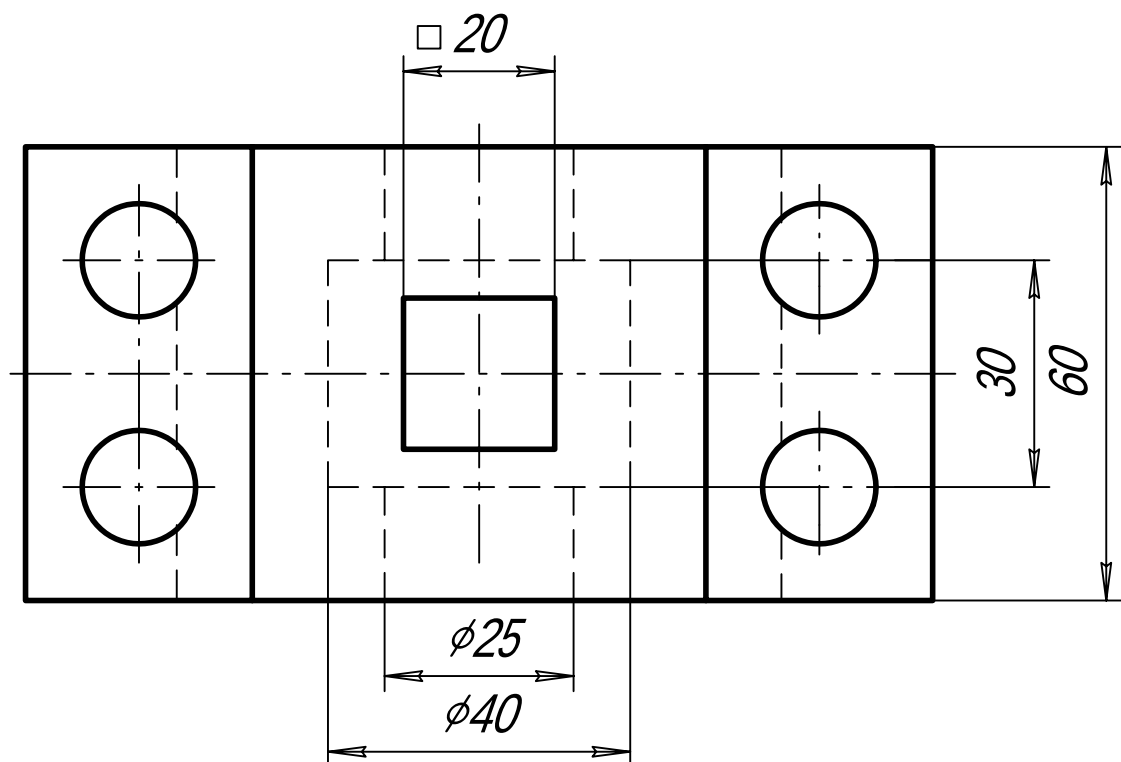




3T.47

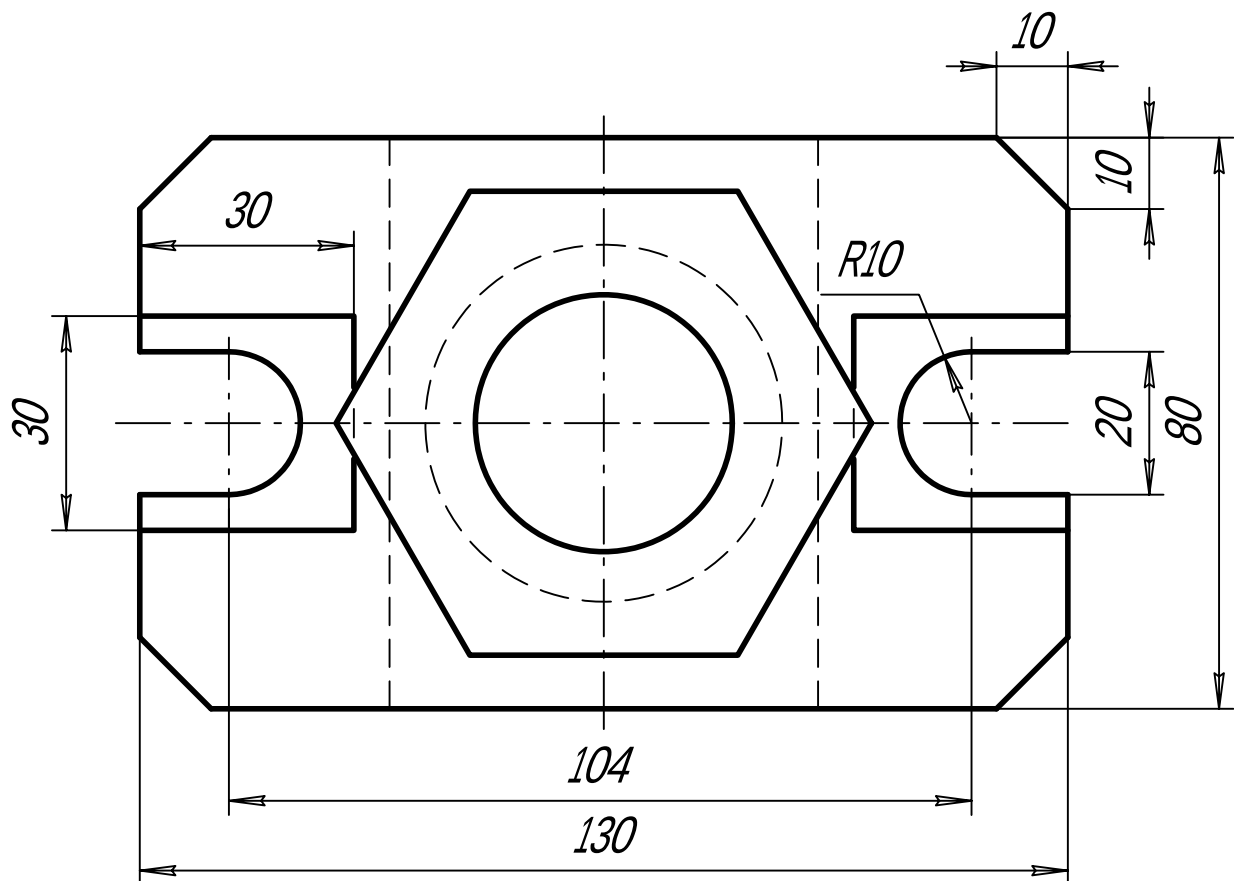
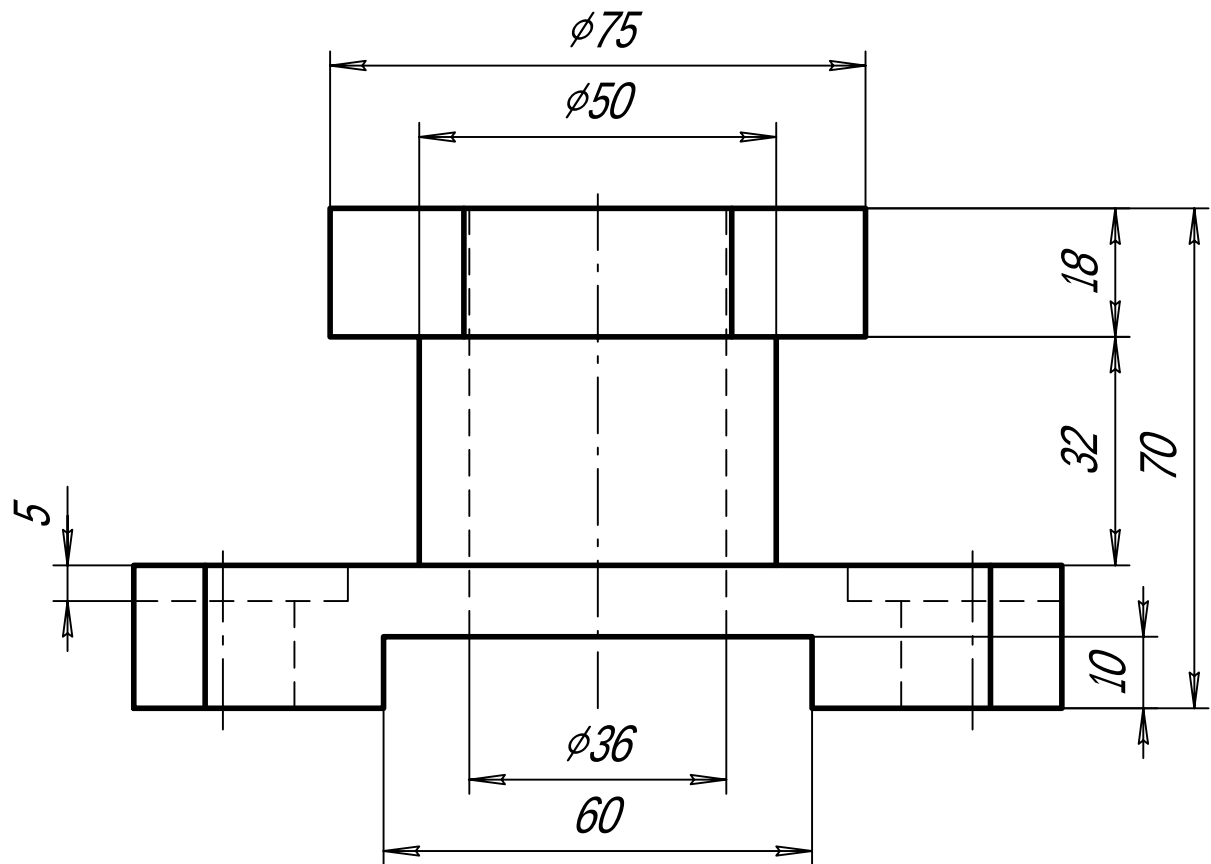


Technical drawing of a mechanical part, showing a front view. The part features a central circular hole with a diameter of $\phi 15$. The top surface is semi-circular with a radius of $R30$. The overall width is 120 , and the overall height is 50 . The base is divided into three sections: a central rectangular section with a width of 80 and a height of 20 , and two side sections with a width of 20 each and a height of 10 . The distance between the inner vertical edges of the side sections is 90 . The drawing includes dimension lines and arrows indicating the measurements.



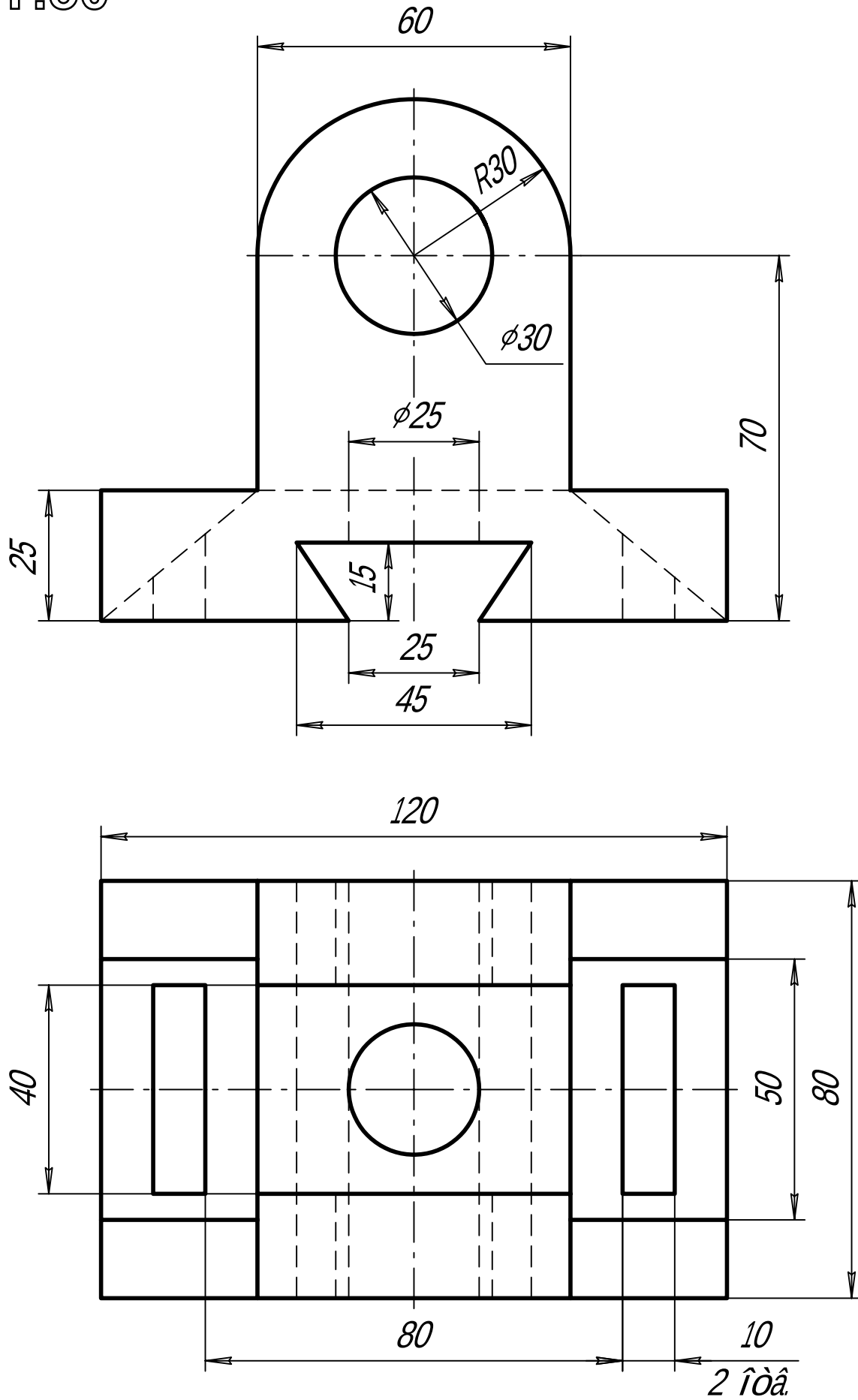


3T.49



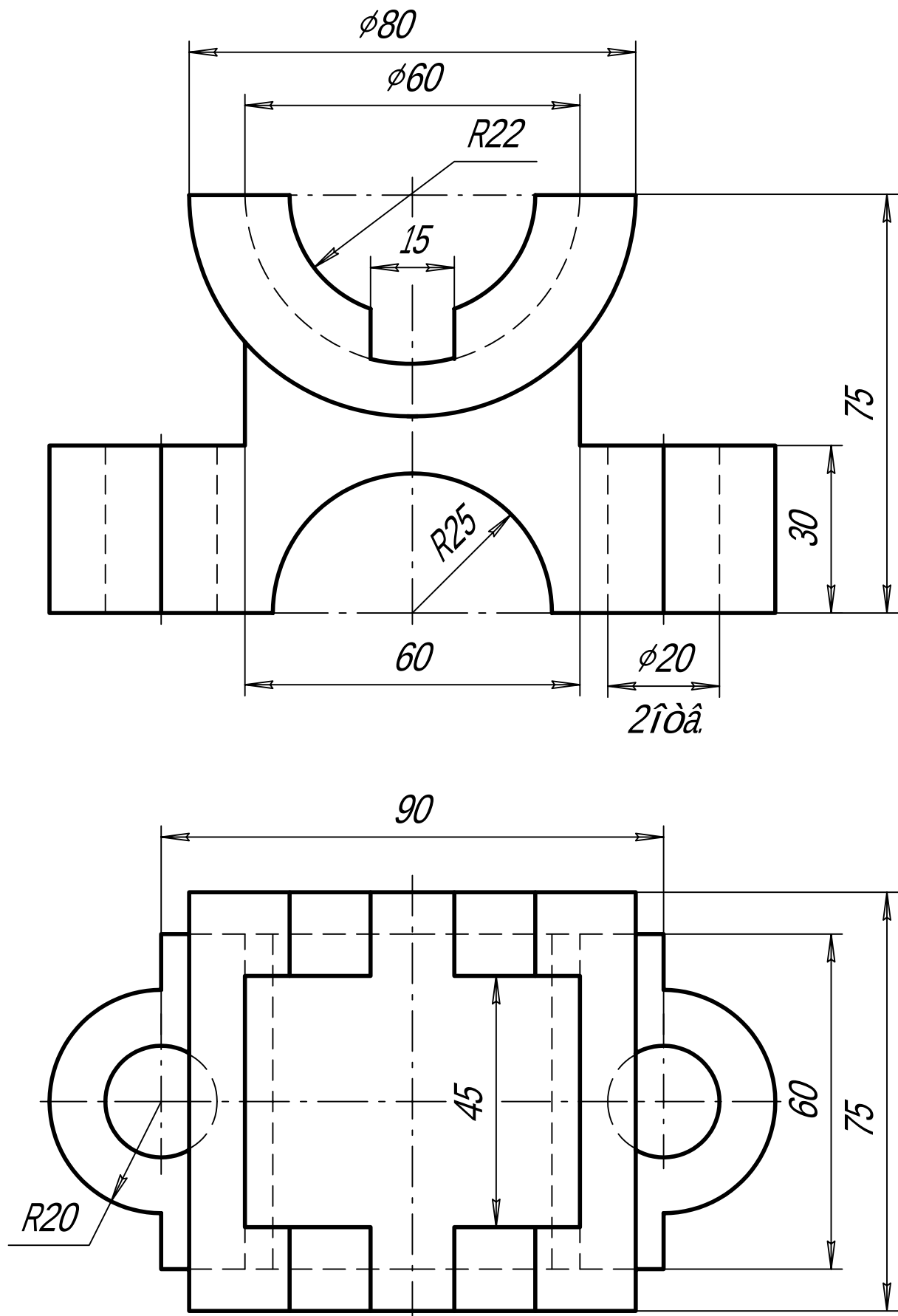


3T.50



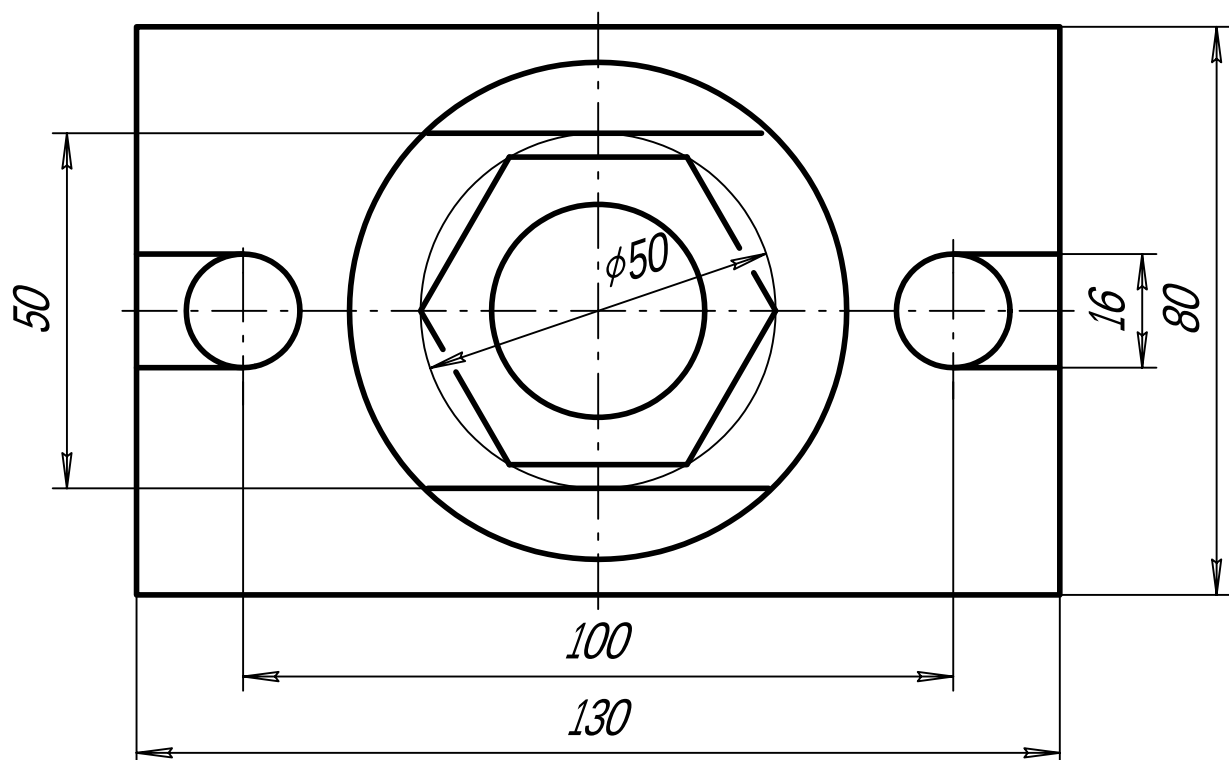
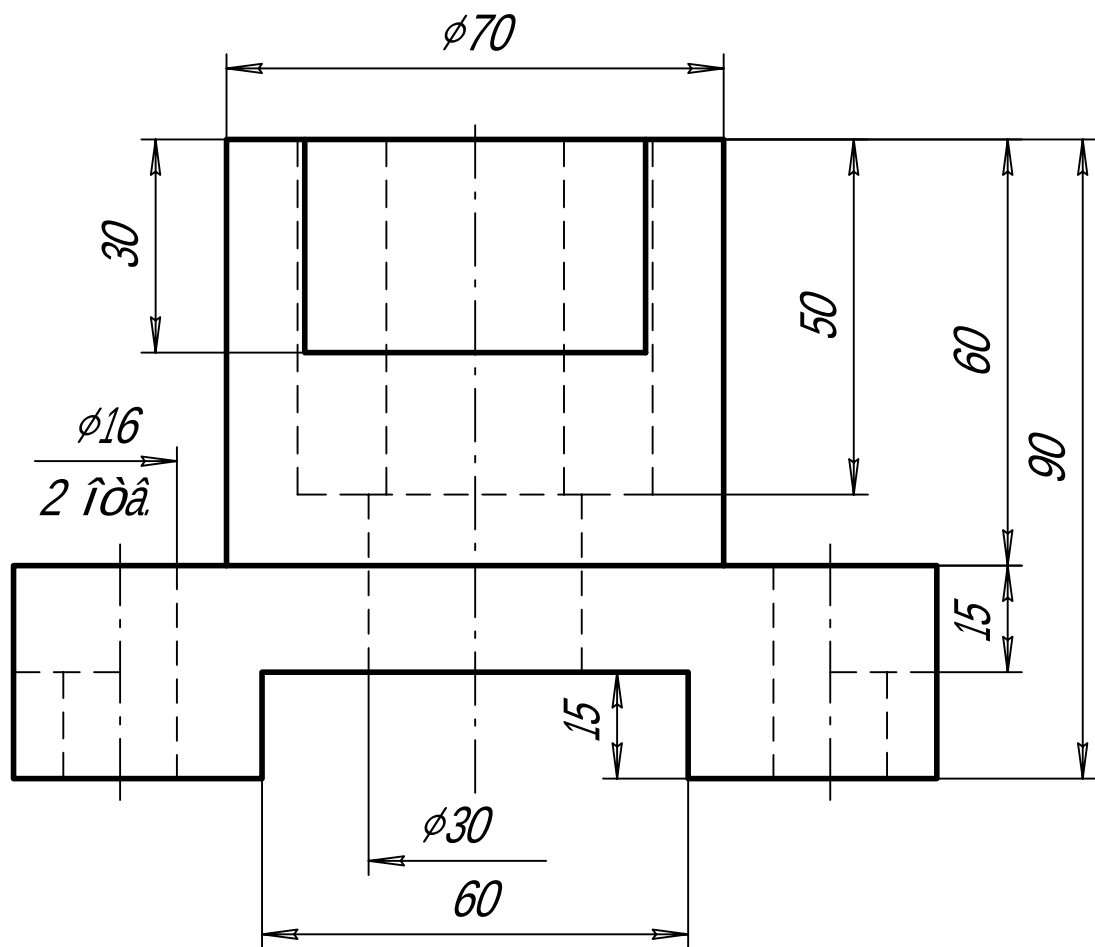


3T.51



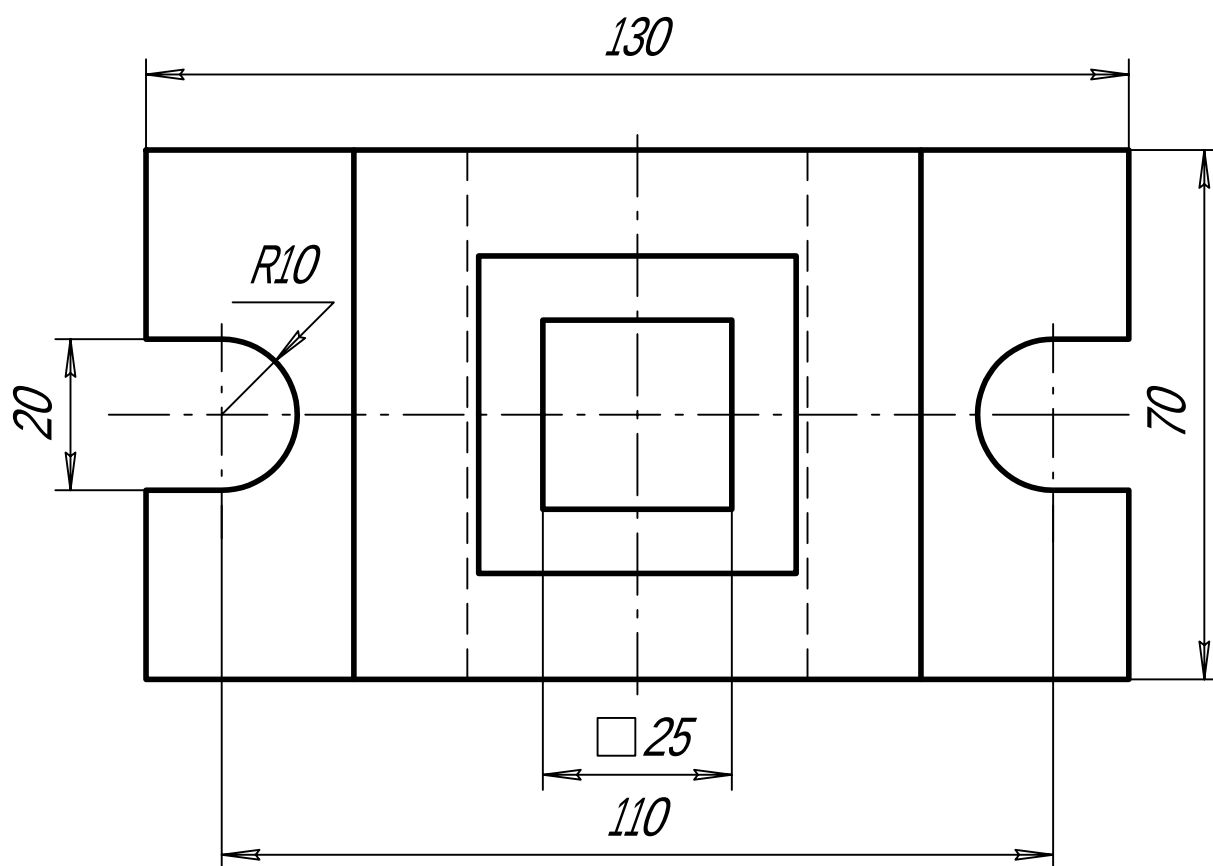
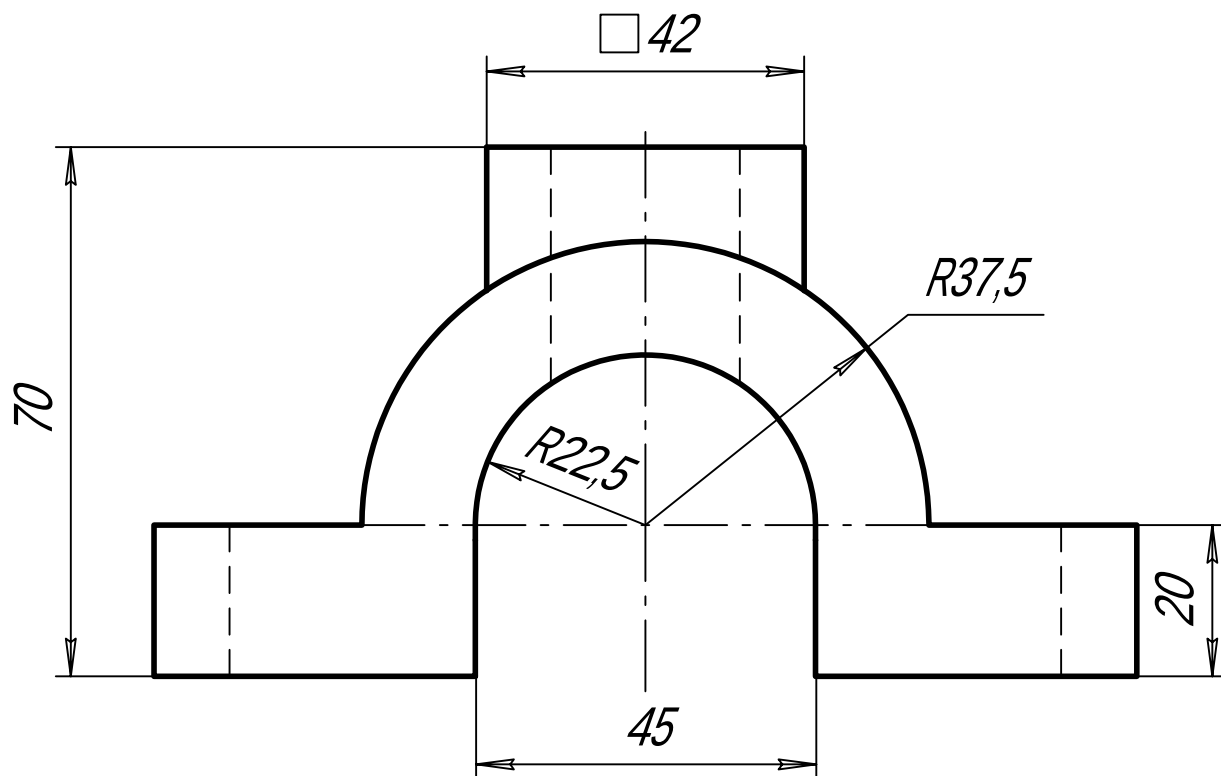


3T.52



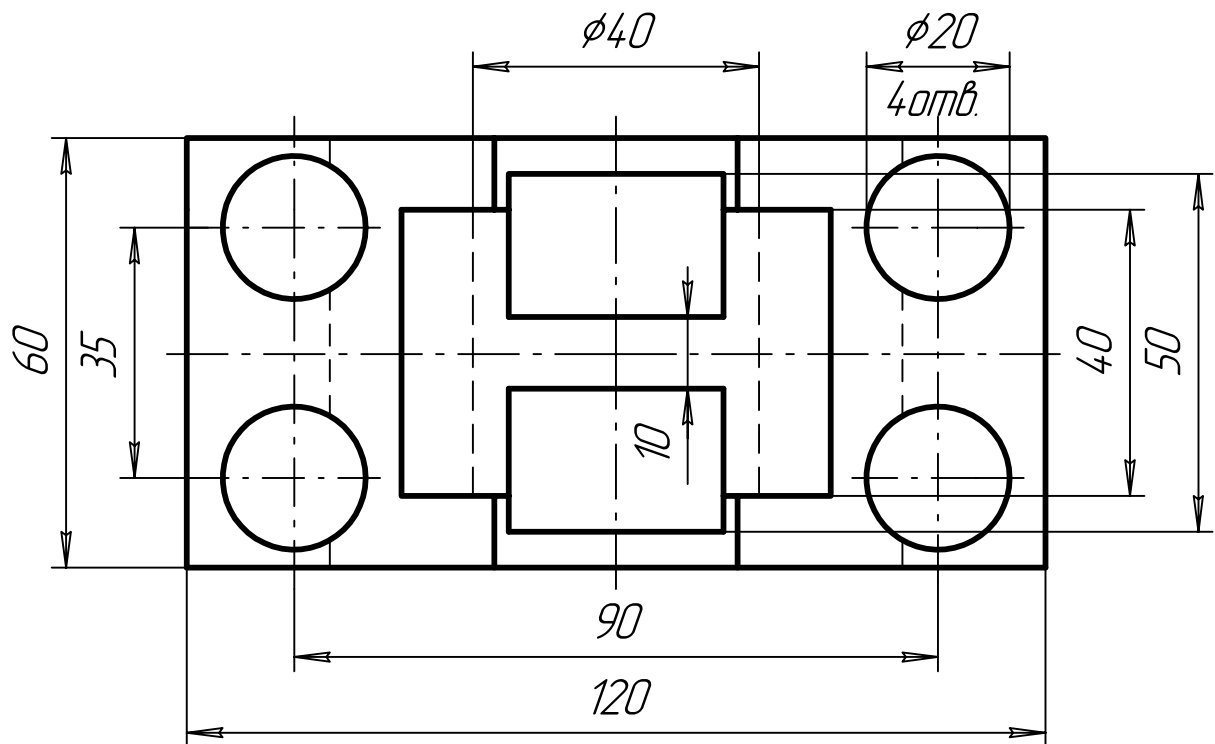
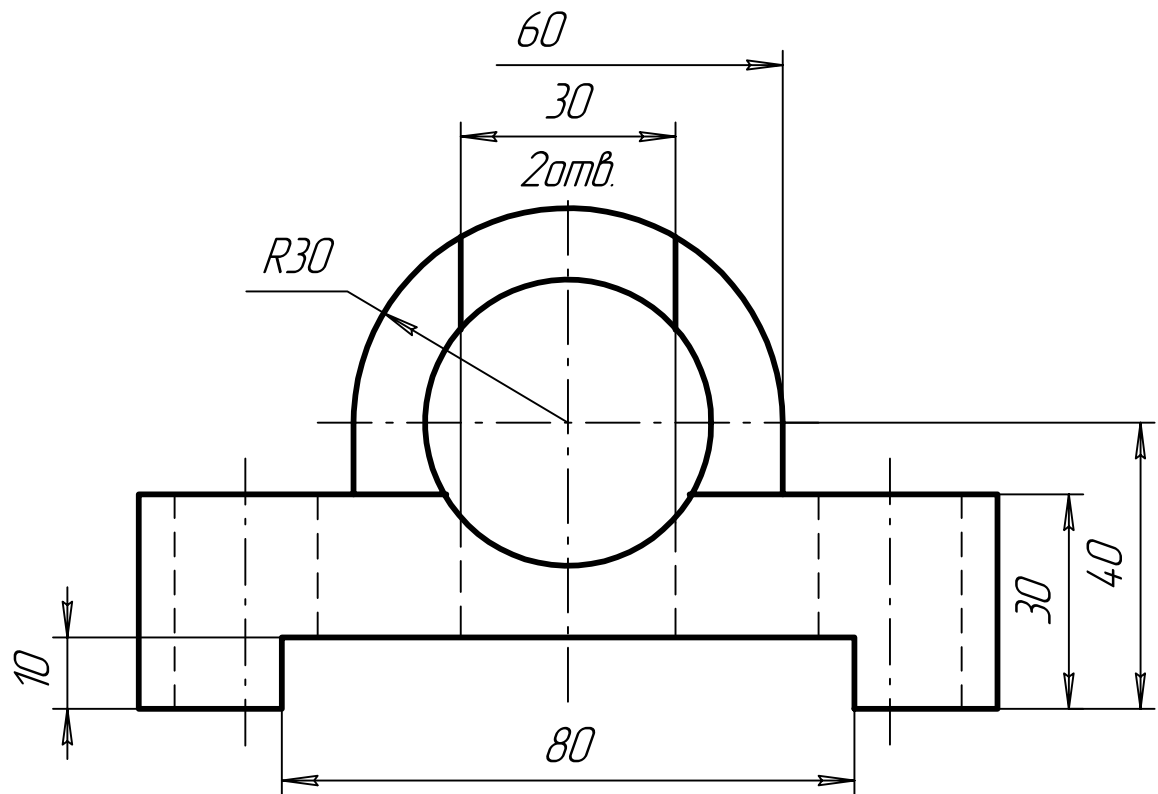


3T.53



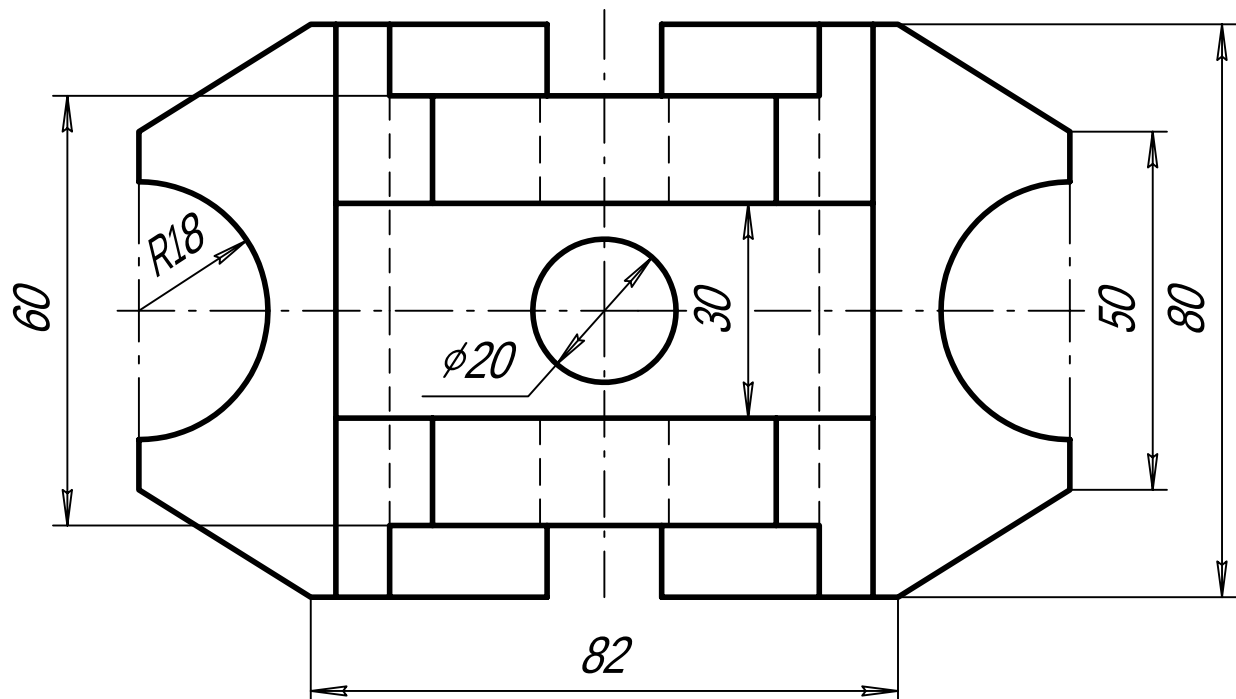
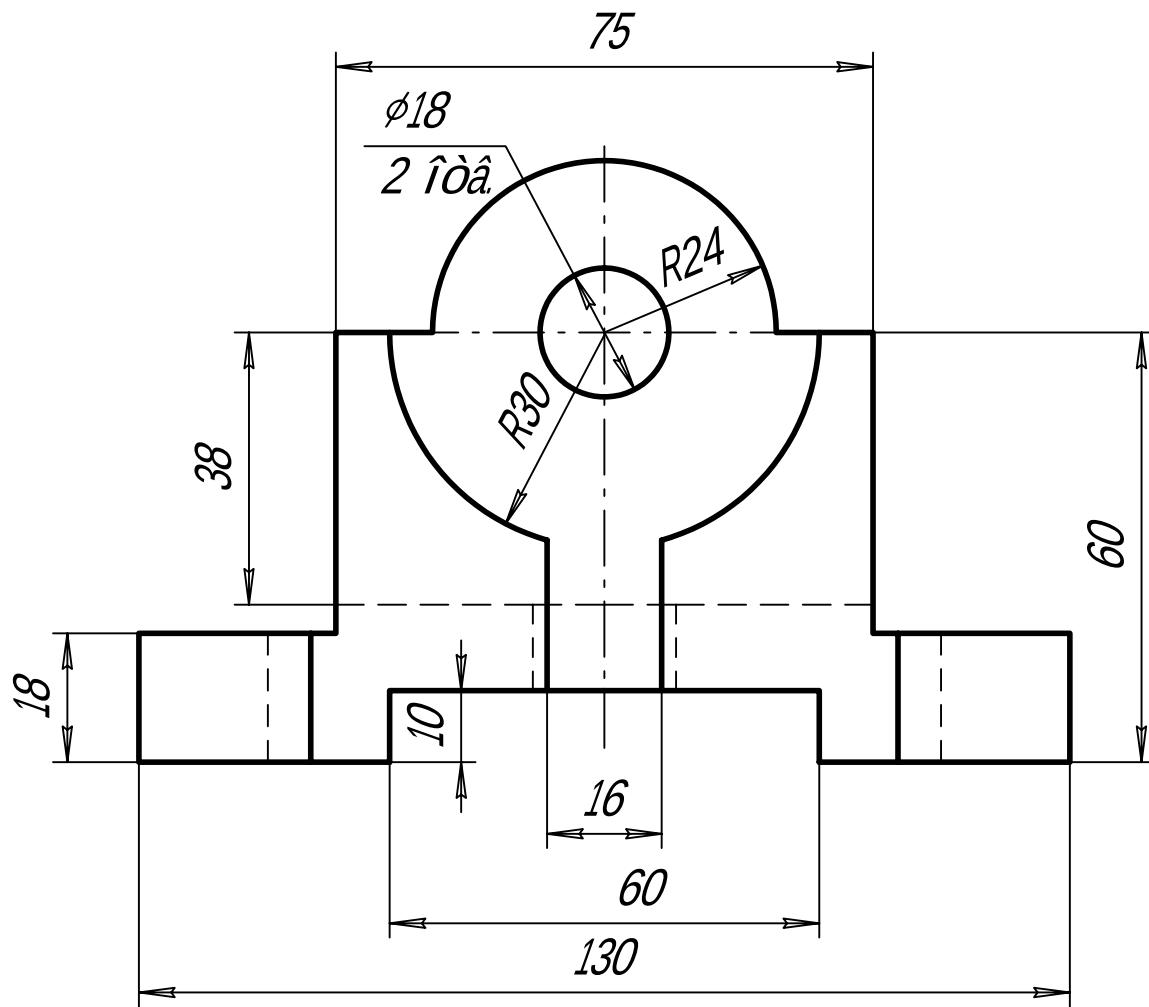


3T.54



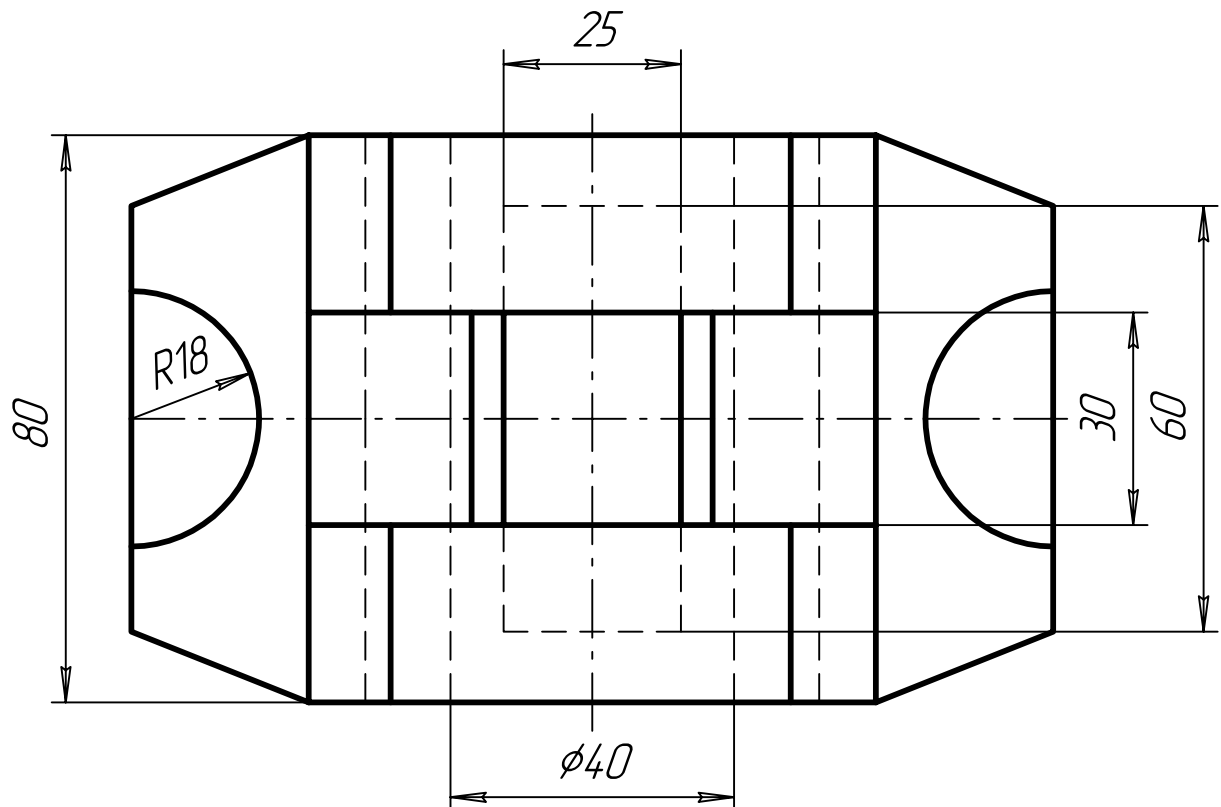
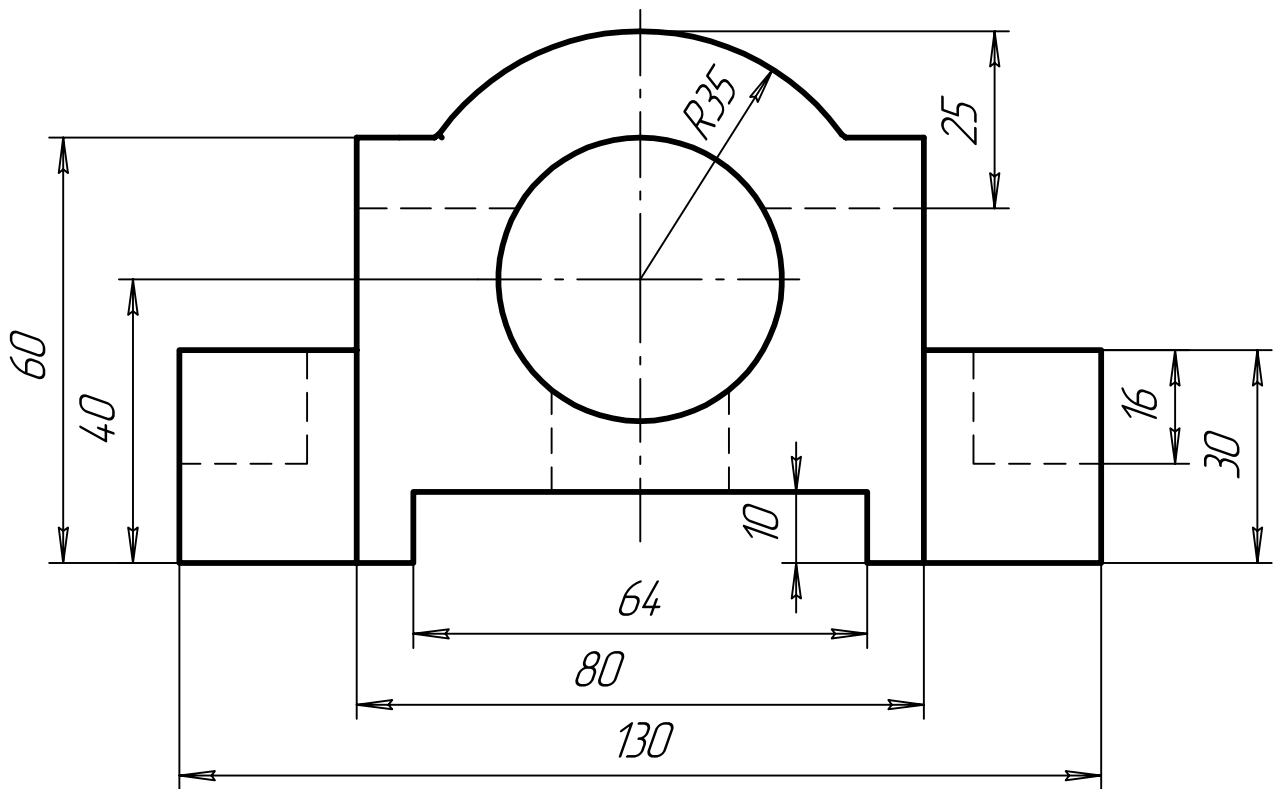


3T.55



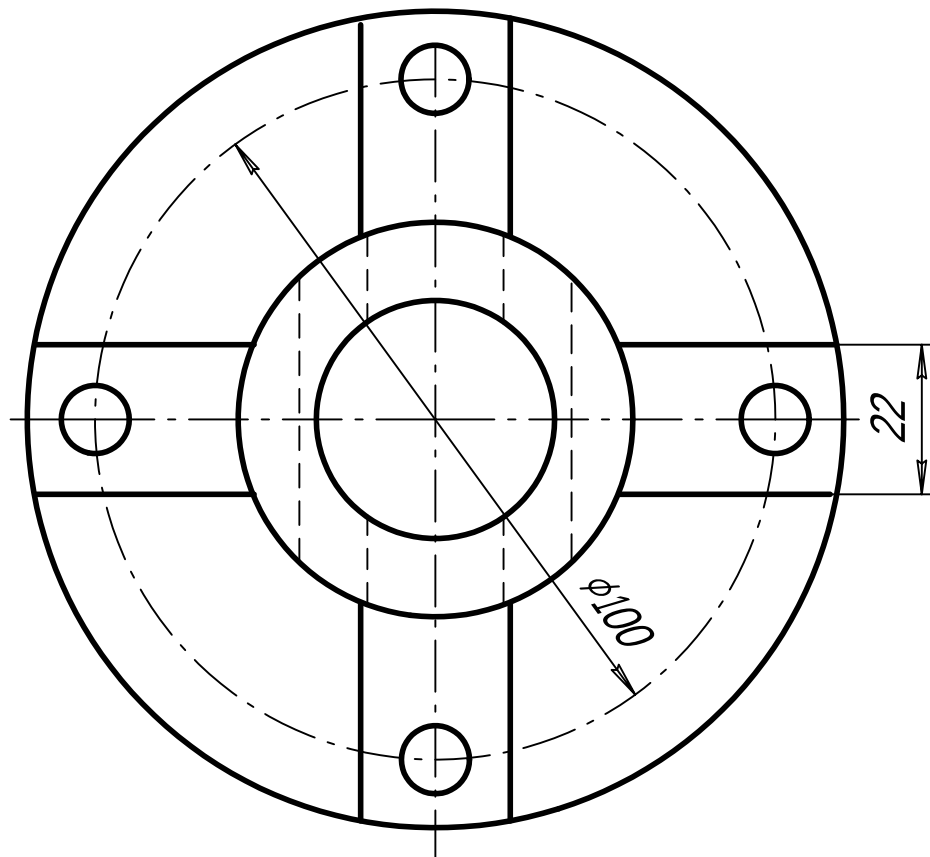
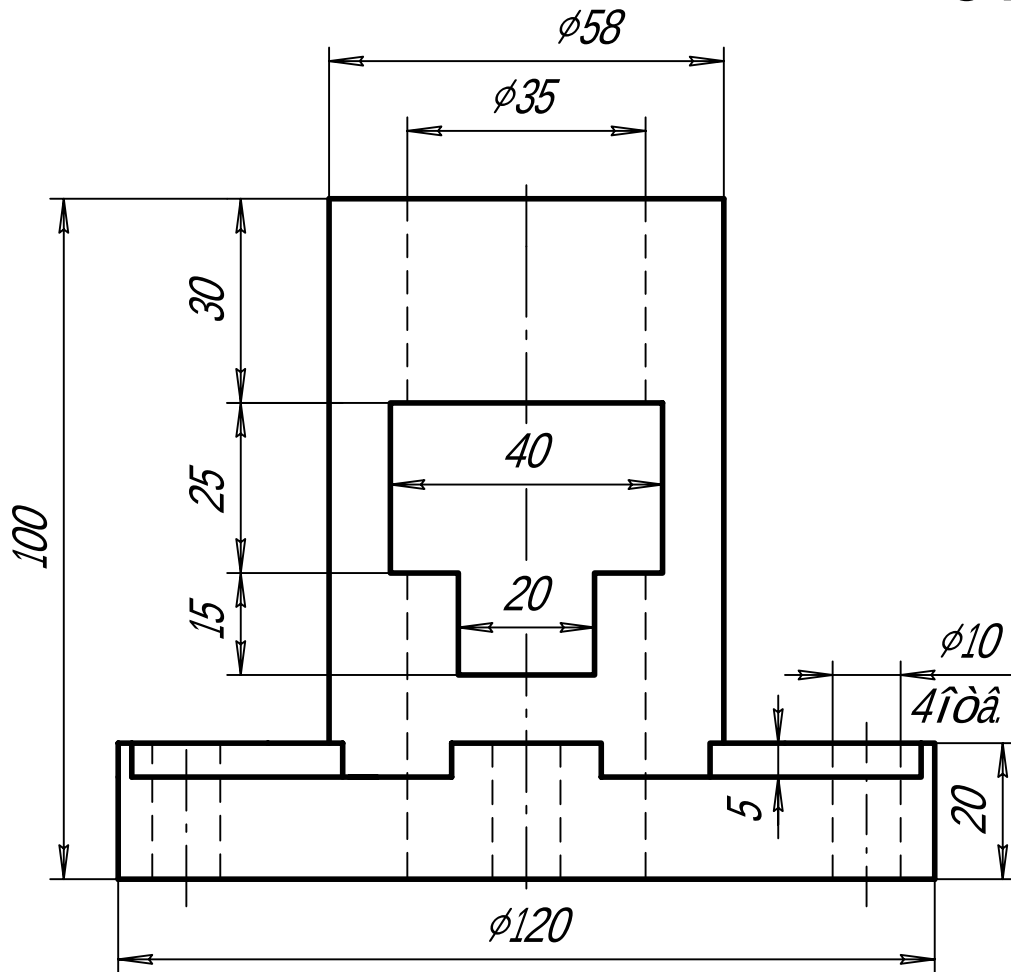


3T.56



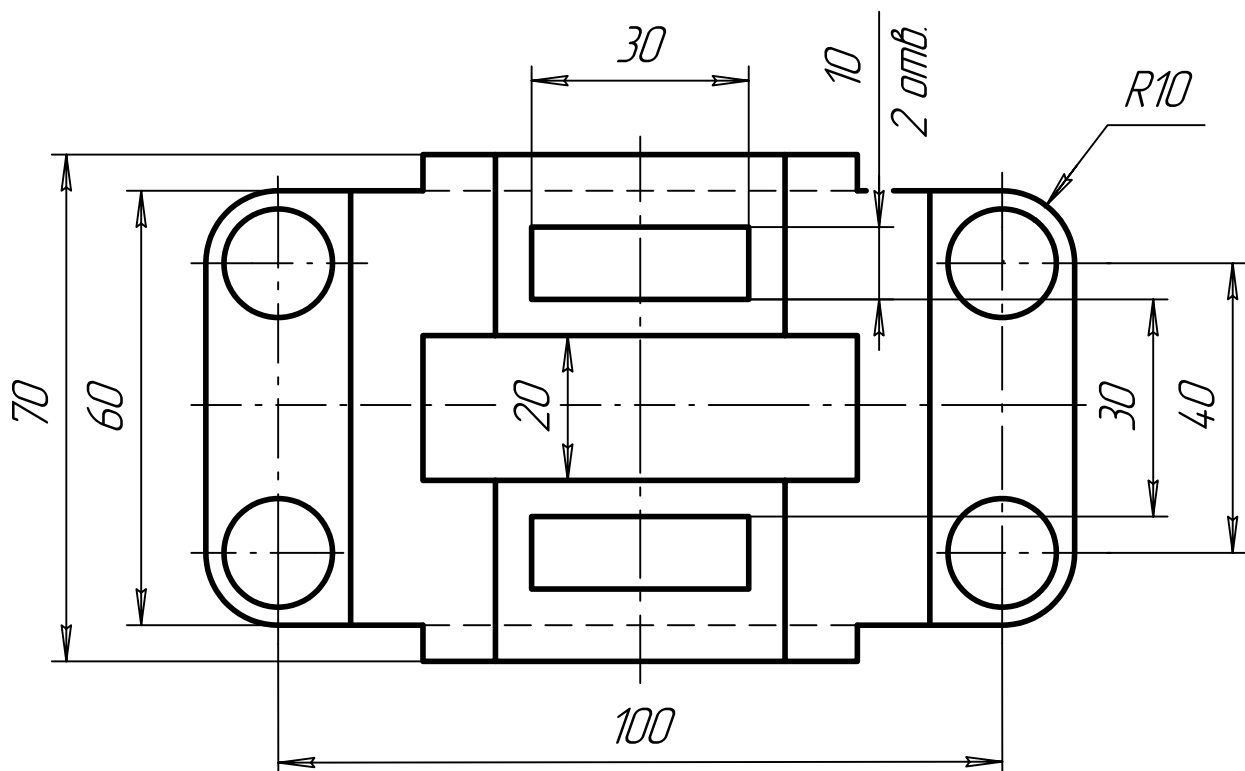
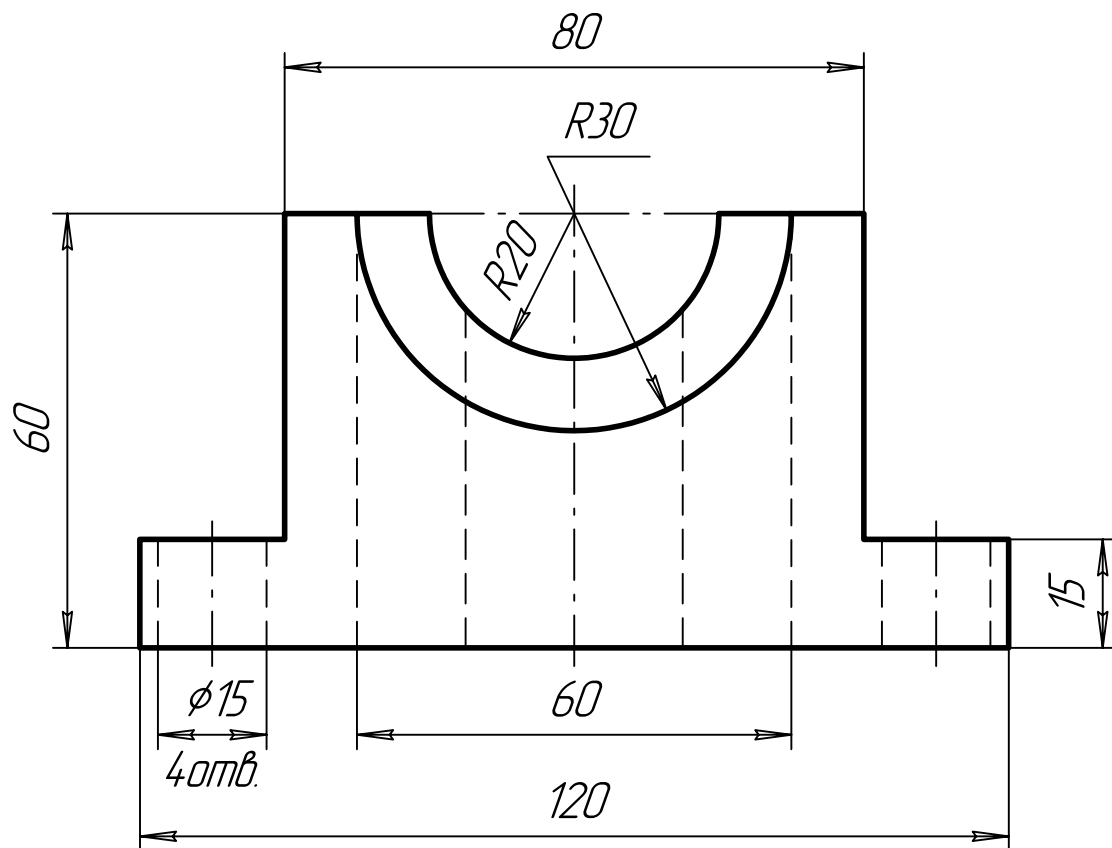


3T.57



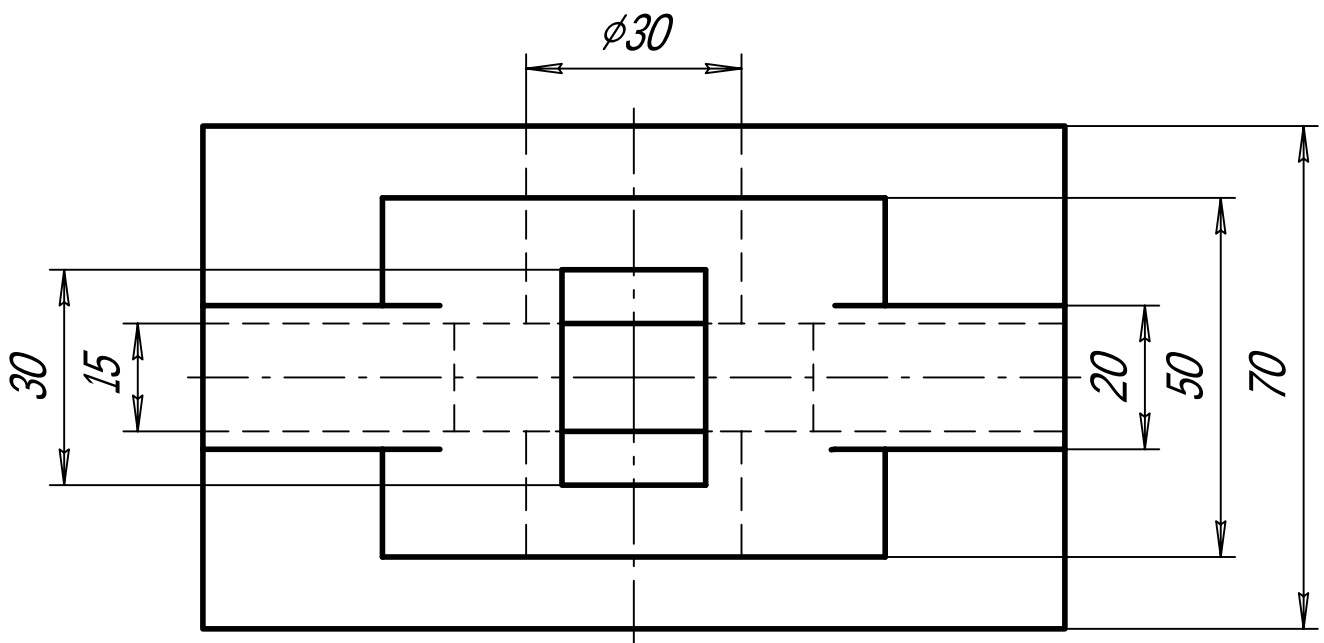
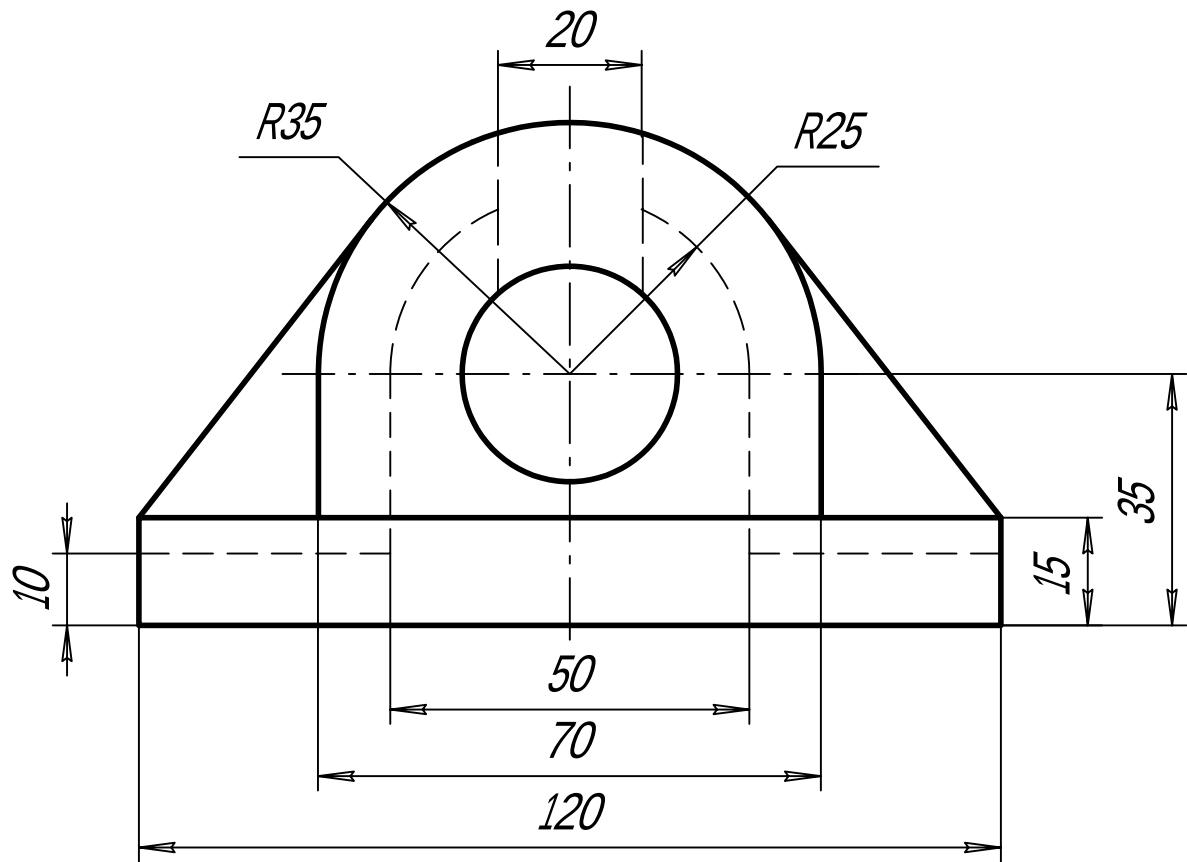


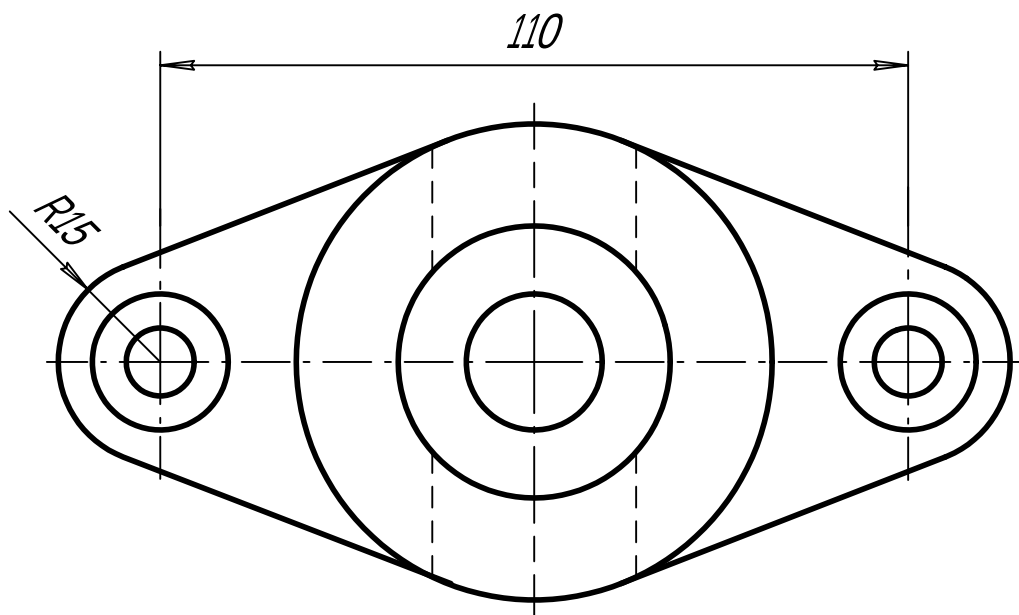
3T.58





3T.59



[illegible]



4Т. ВЫПОЛНЕНИЕ СЛОЖНЫХ РАЗРЕЗОВ (задания 4Т.01..4Т.60)

В условиях заданий даны два вида предмета - спереди (главный) и сверху (рис. 9). Указаны размеры предмета.

Требуется начертить три вида предмета - спереди, сверху и слева, выполнить целесообразные сложные разрезы - ступенчатые, ломанные, комбинированные. Для полного выявления формы предмета рекомендуется выполнить также местные и дополнительные виды, местные разрезы и другие изображения, предусмотренные ГОСТ 2.305-68 "Изображения - виды, разрезы, сечения".

Пример выполнения задания показан на рис. 10.

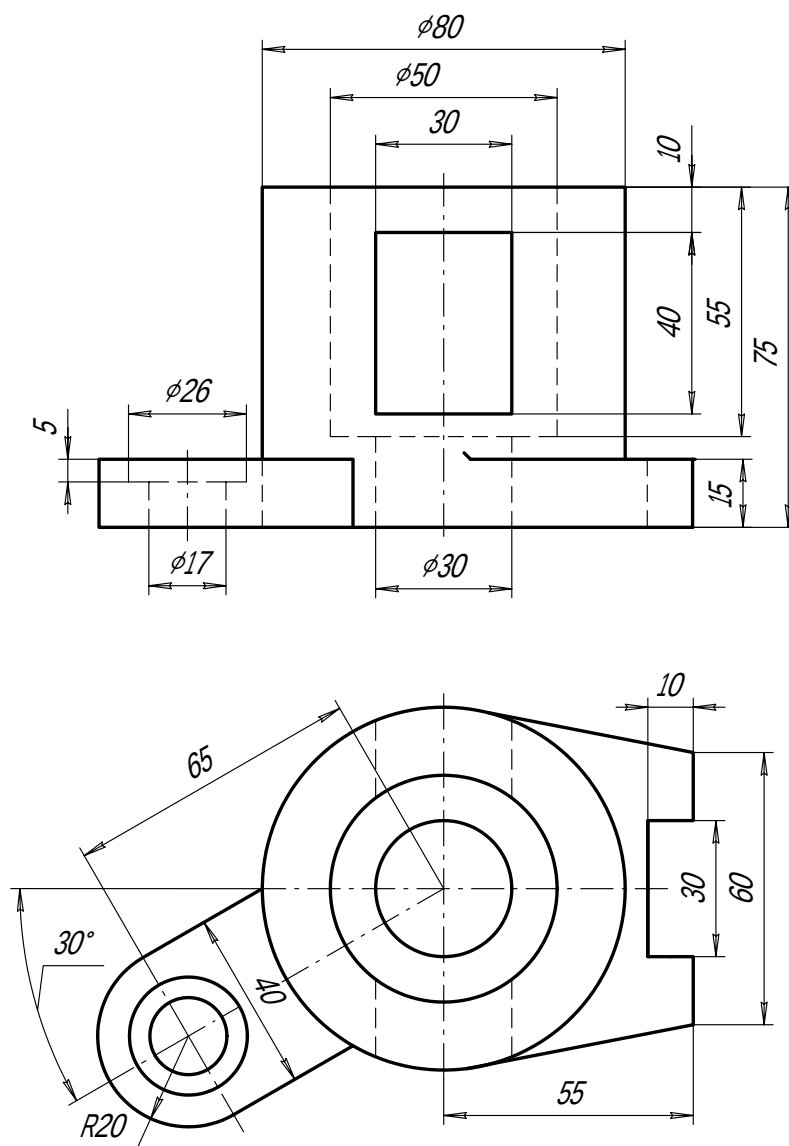
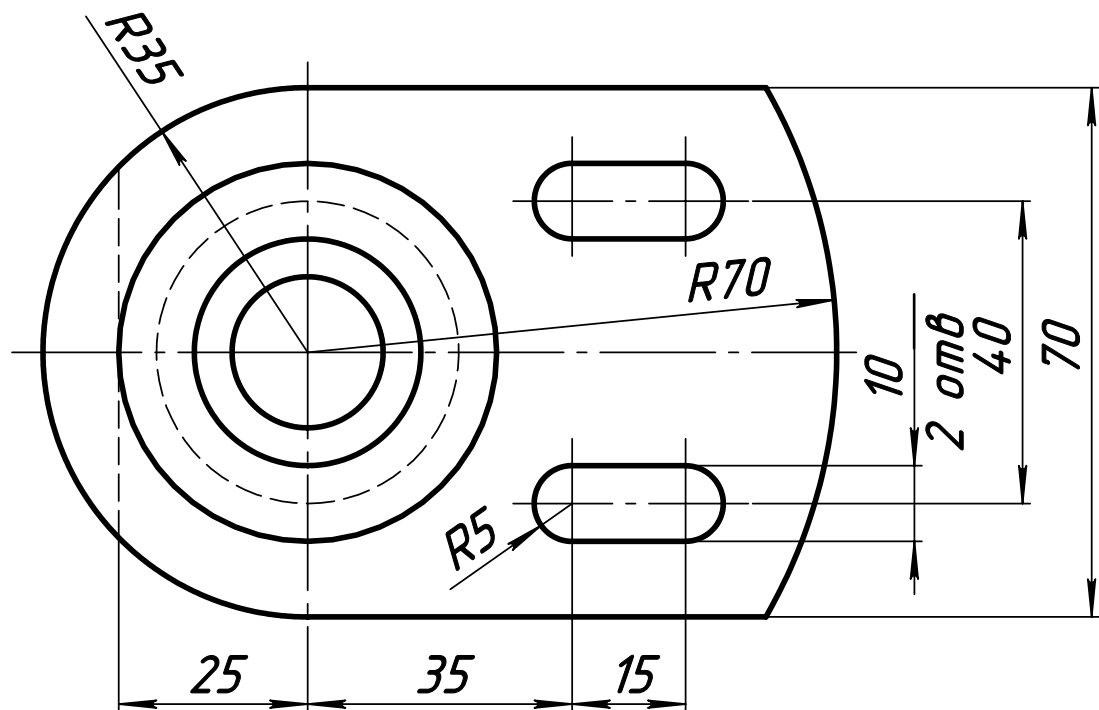
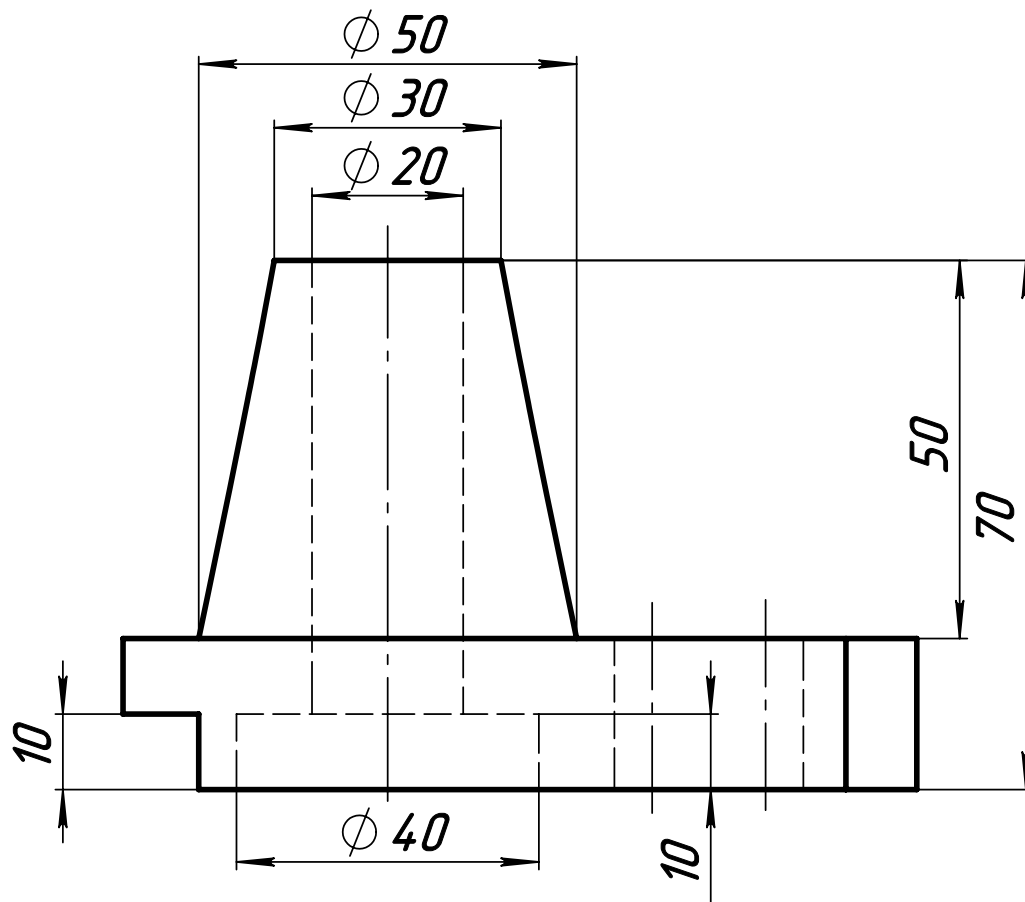


Рис. 9. Пример задания из раздела 4Т

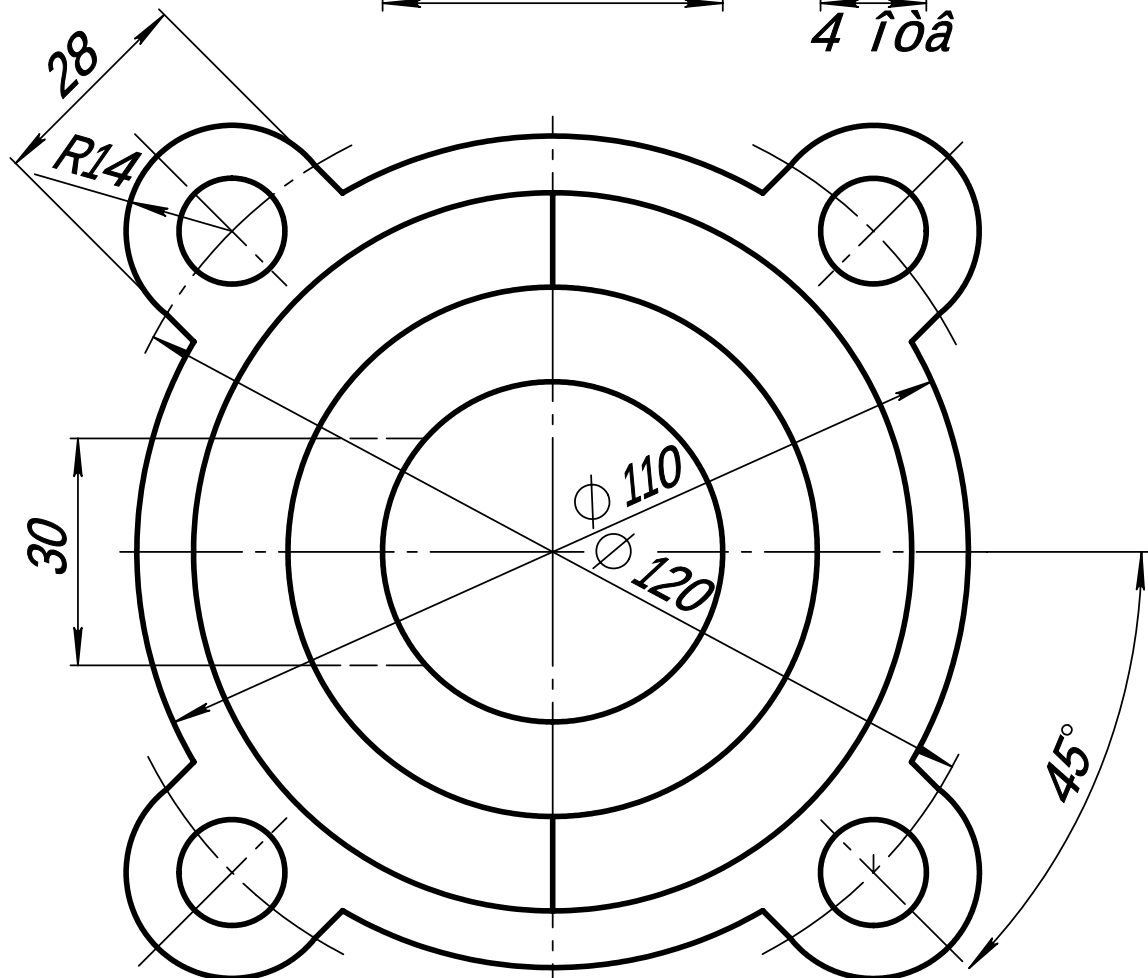
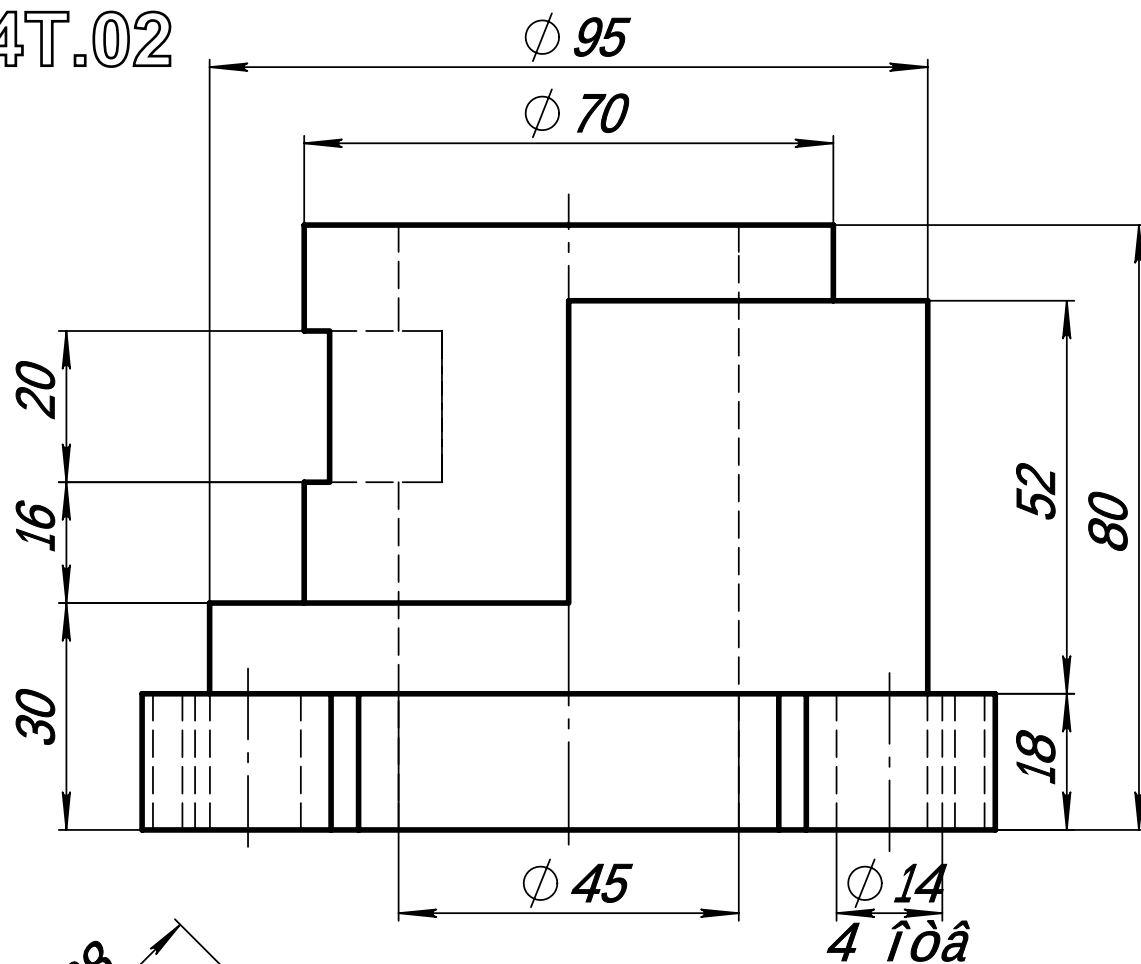


4T.01



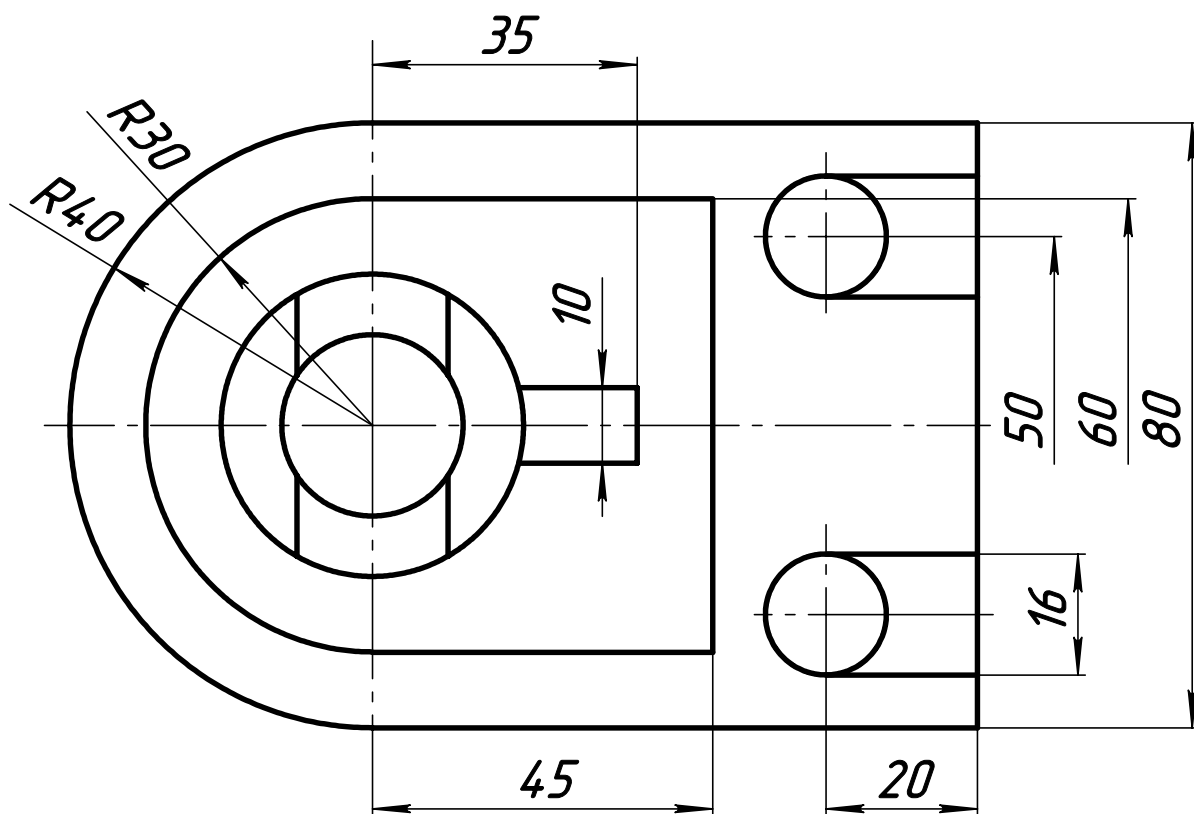
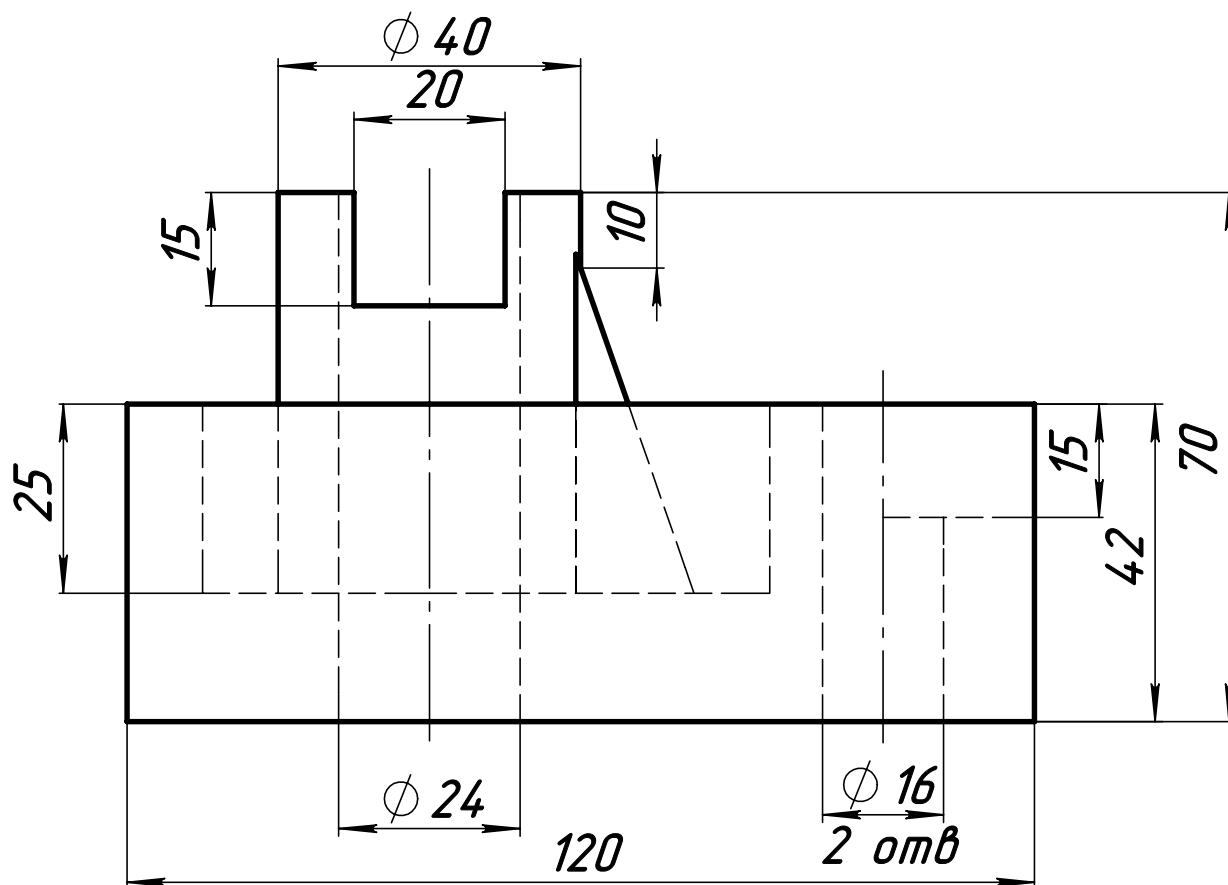


4T.02



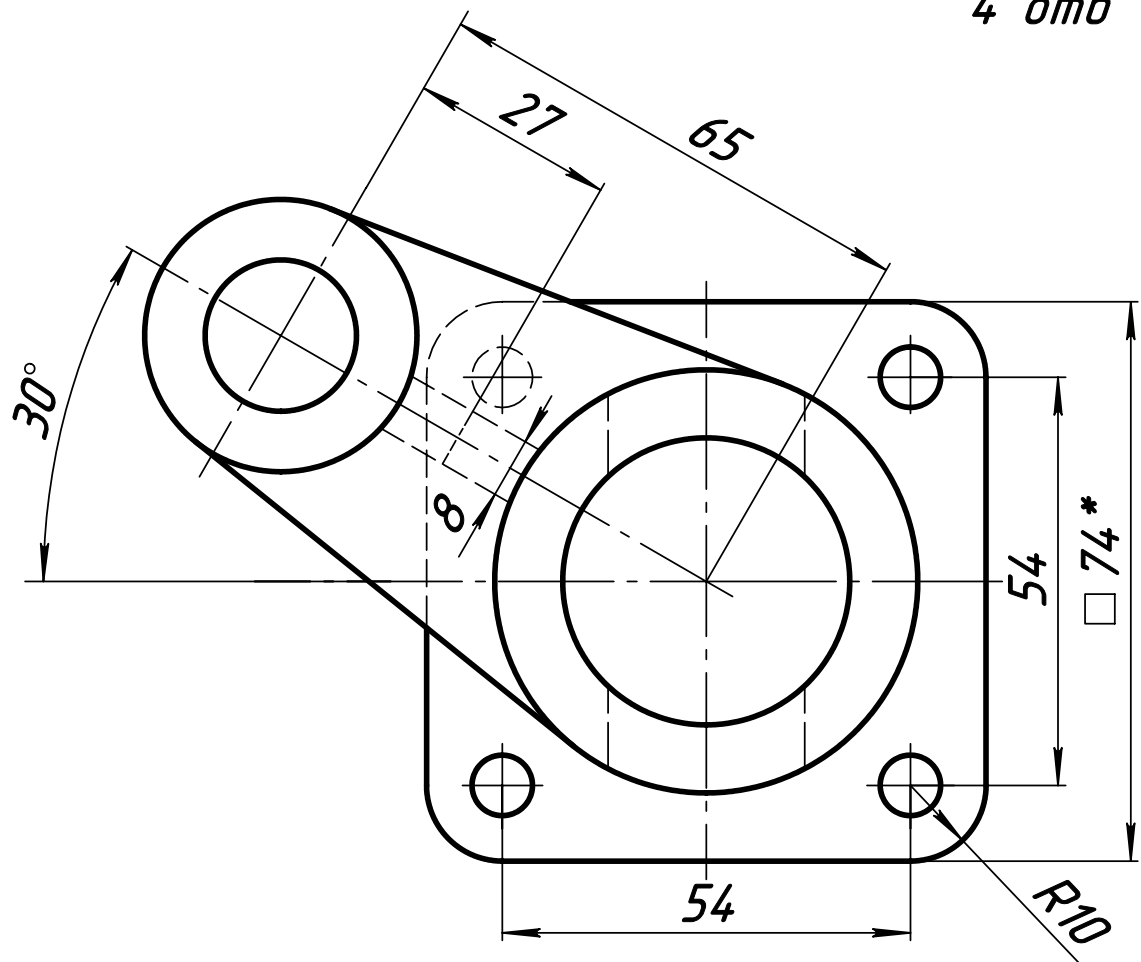
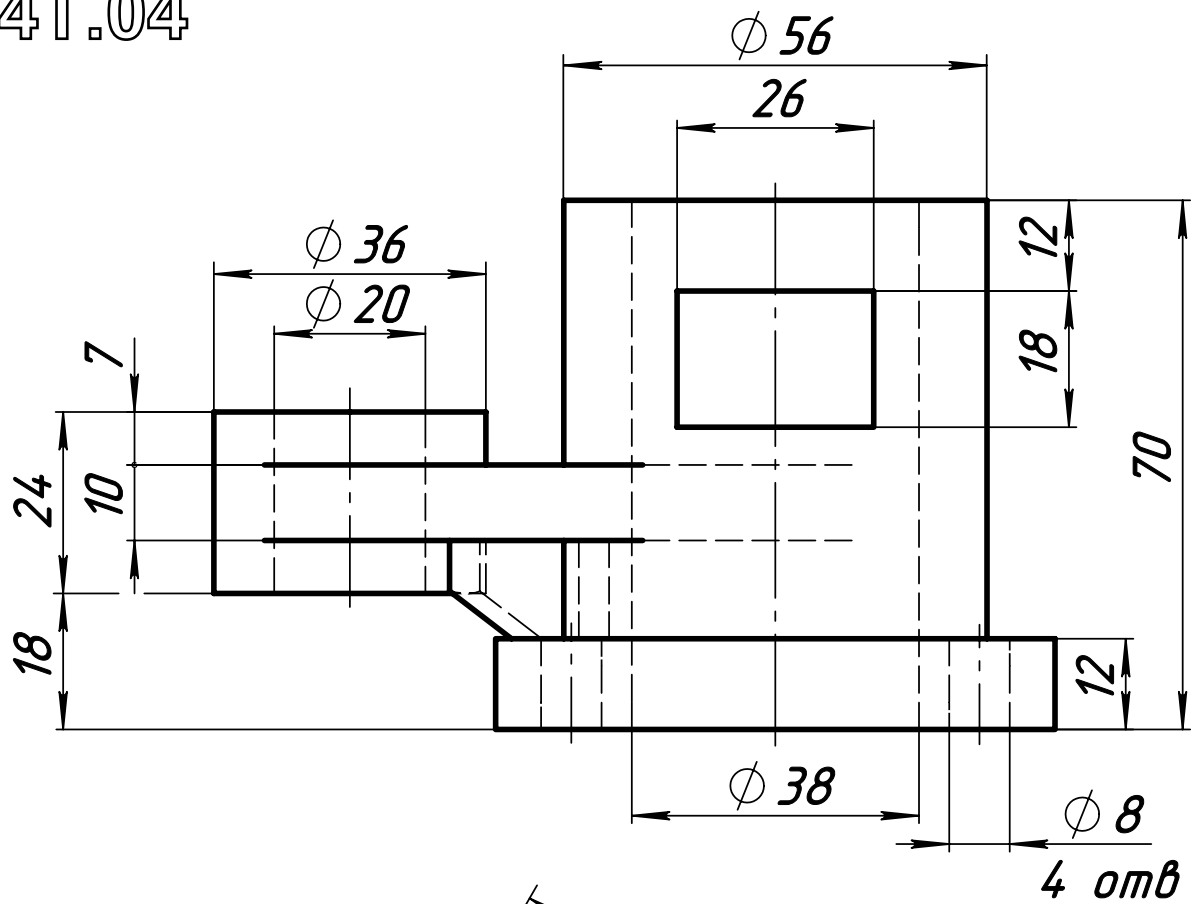


4T.03





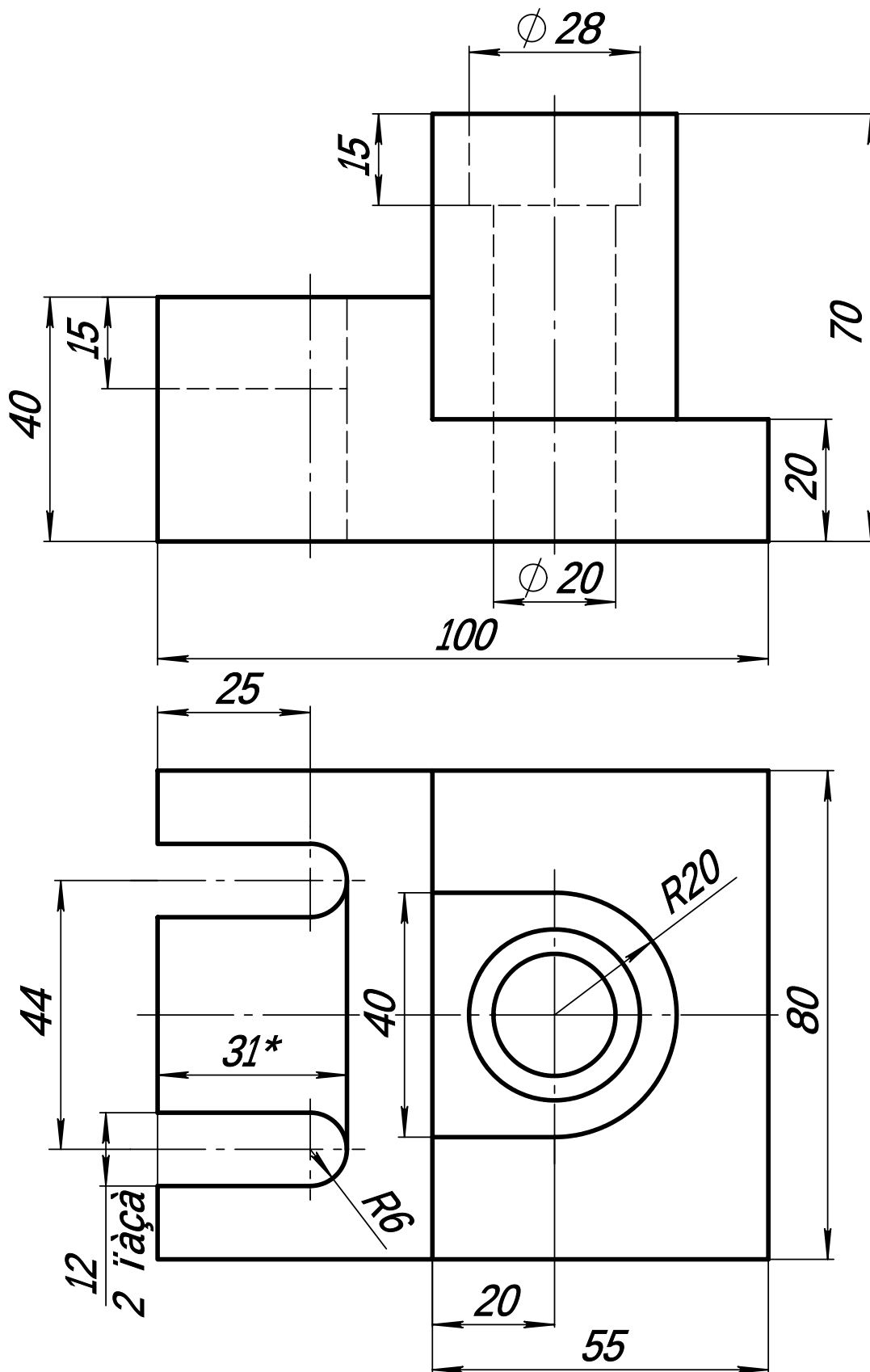
4T.04



*Размер для справок



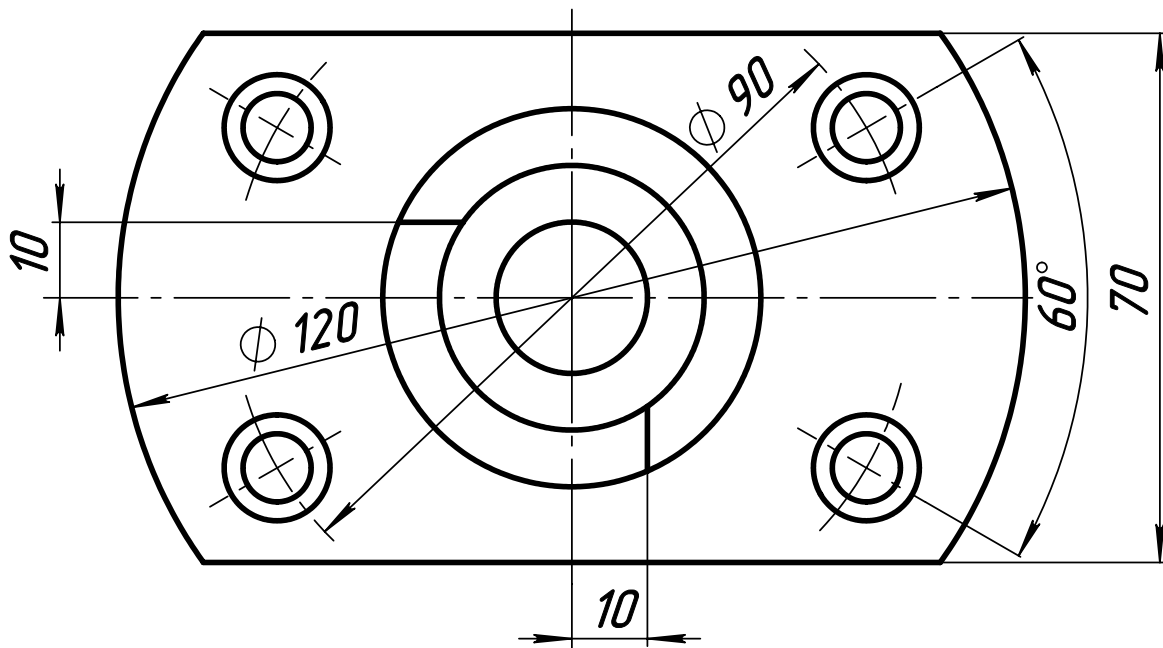
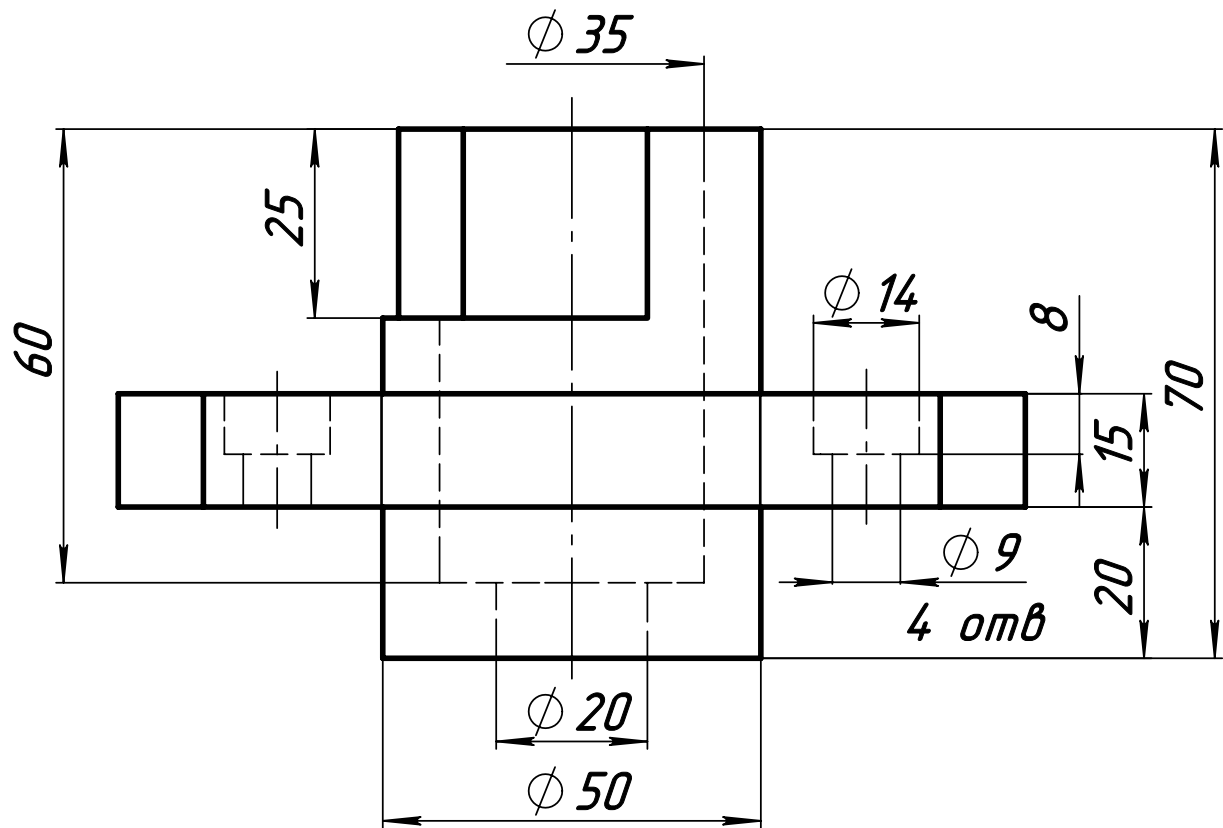
4T.05



*Đàç ìảđ äëŷ ñĩđàâîê

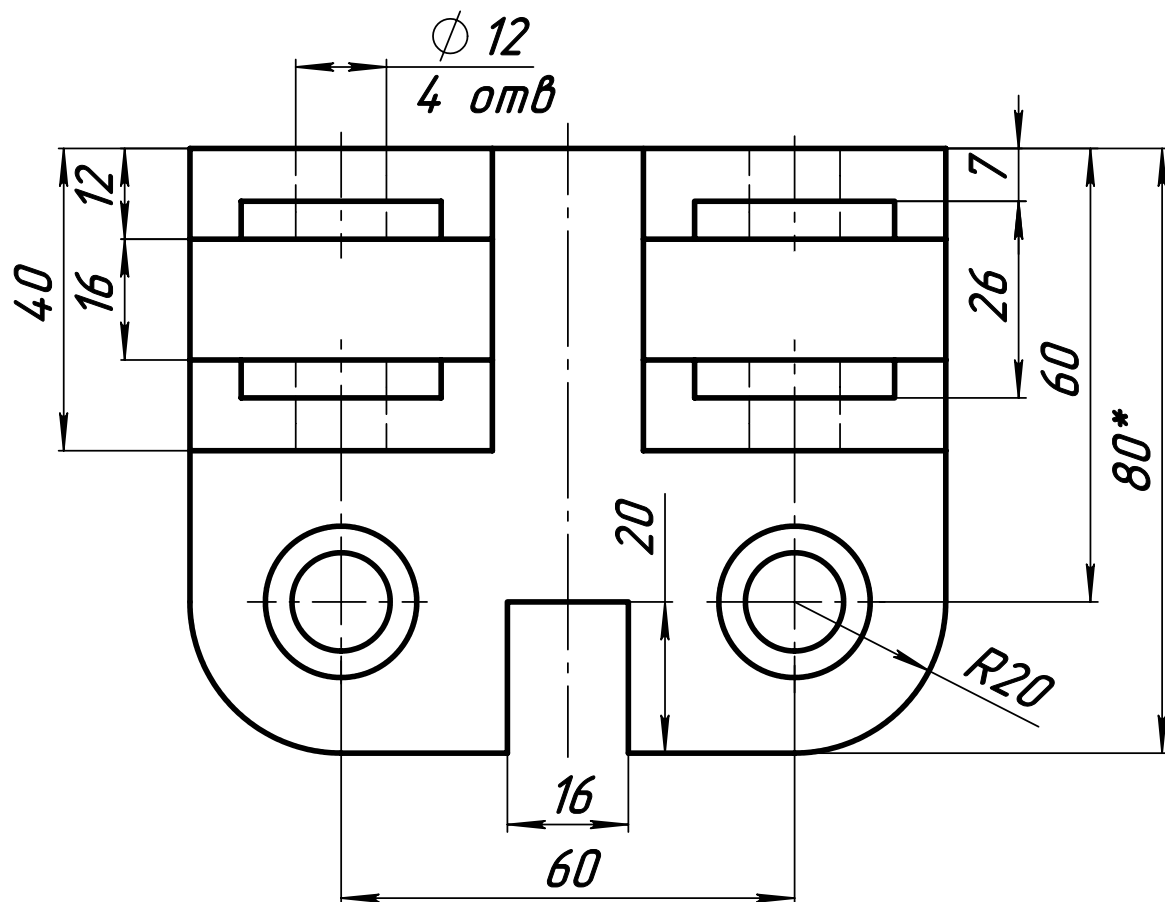
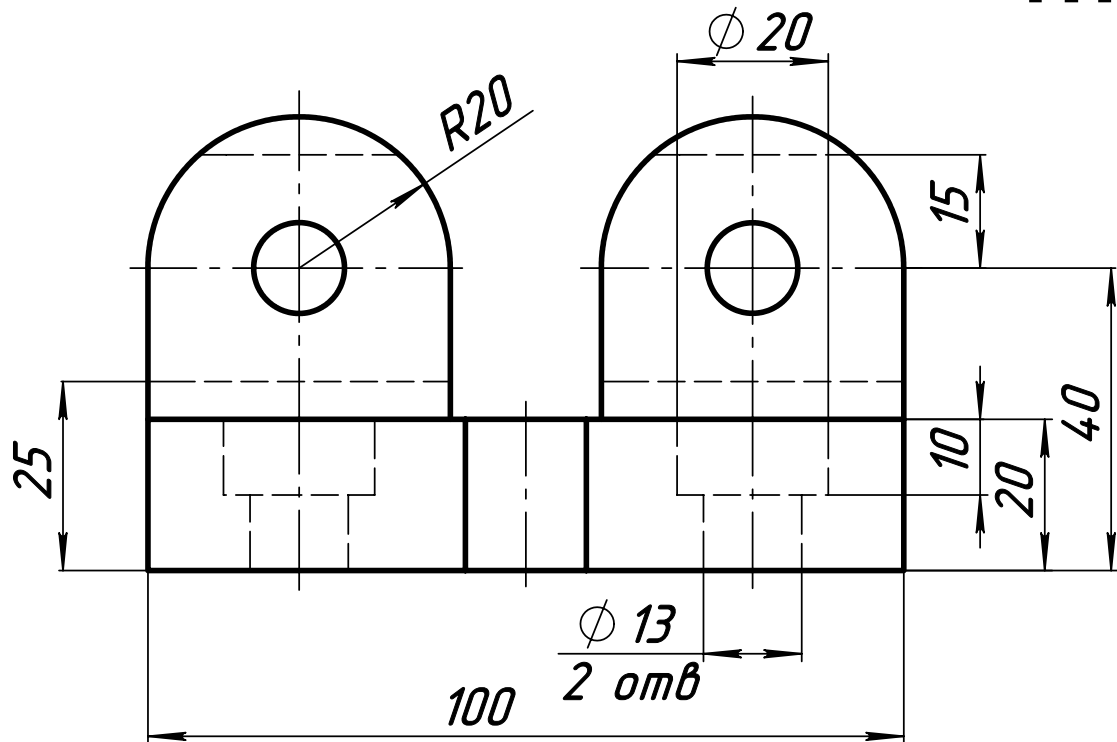


4T.06

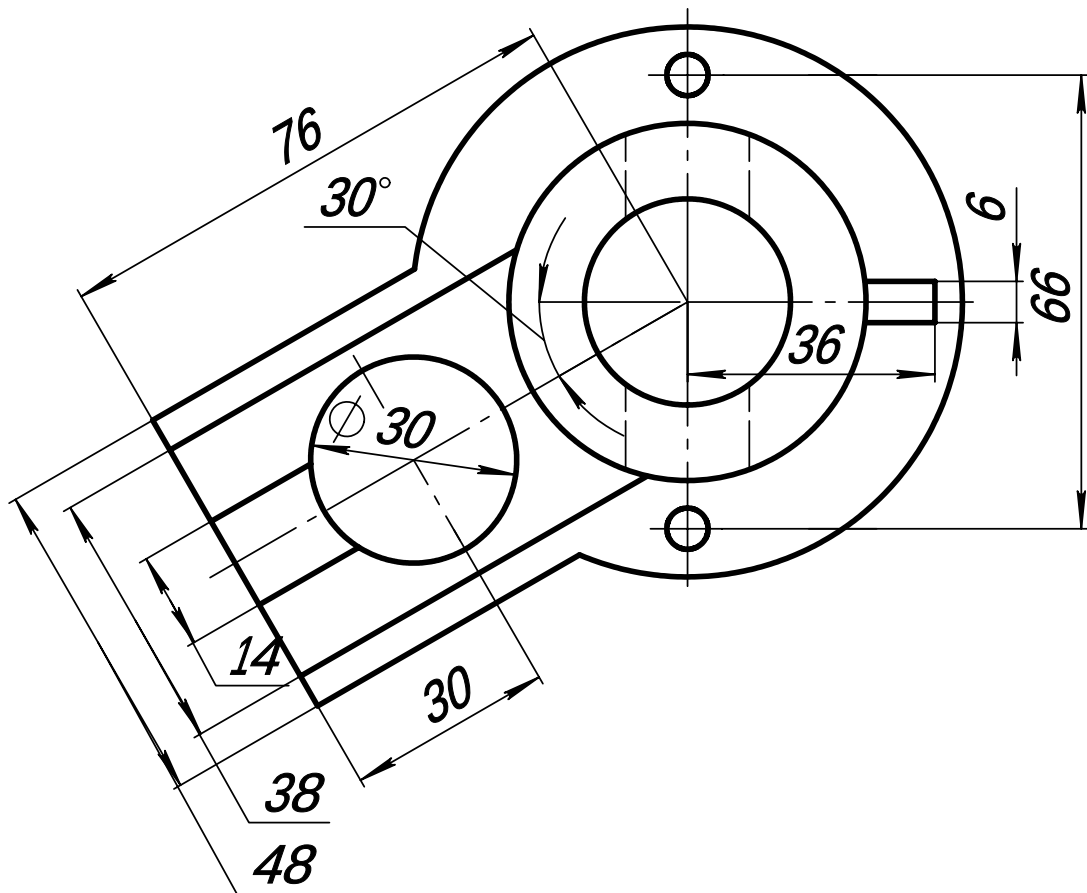




4T.07

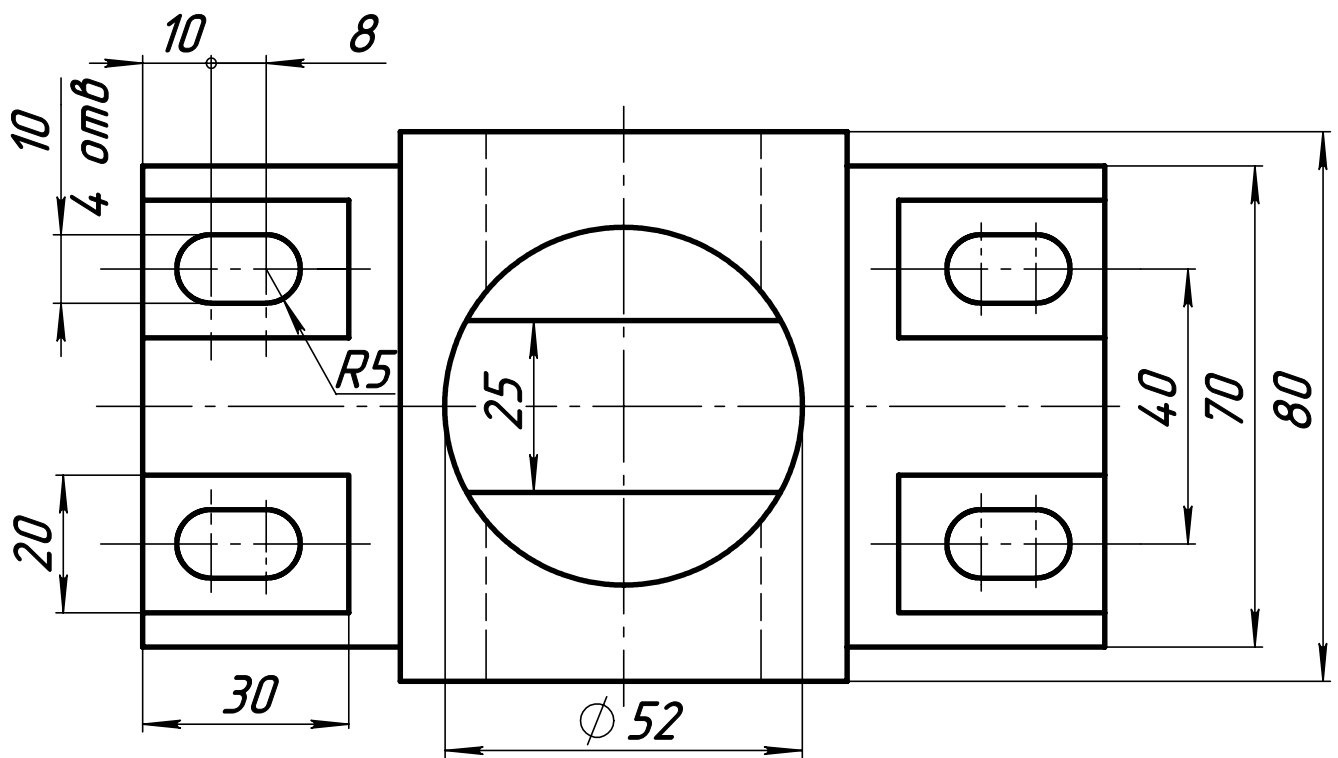
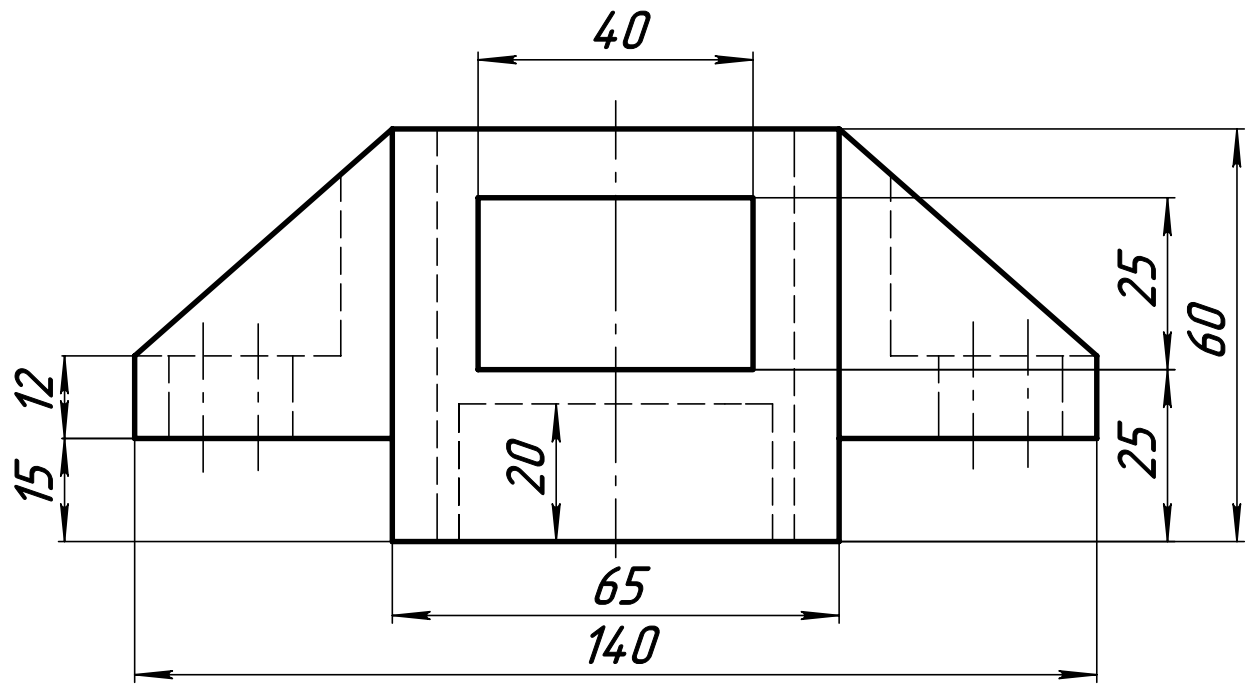


*Размер для справок

[illegible]

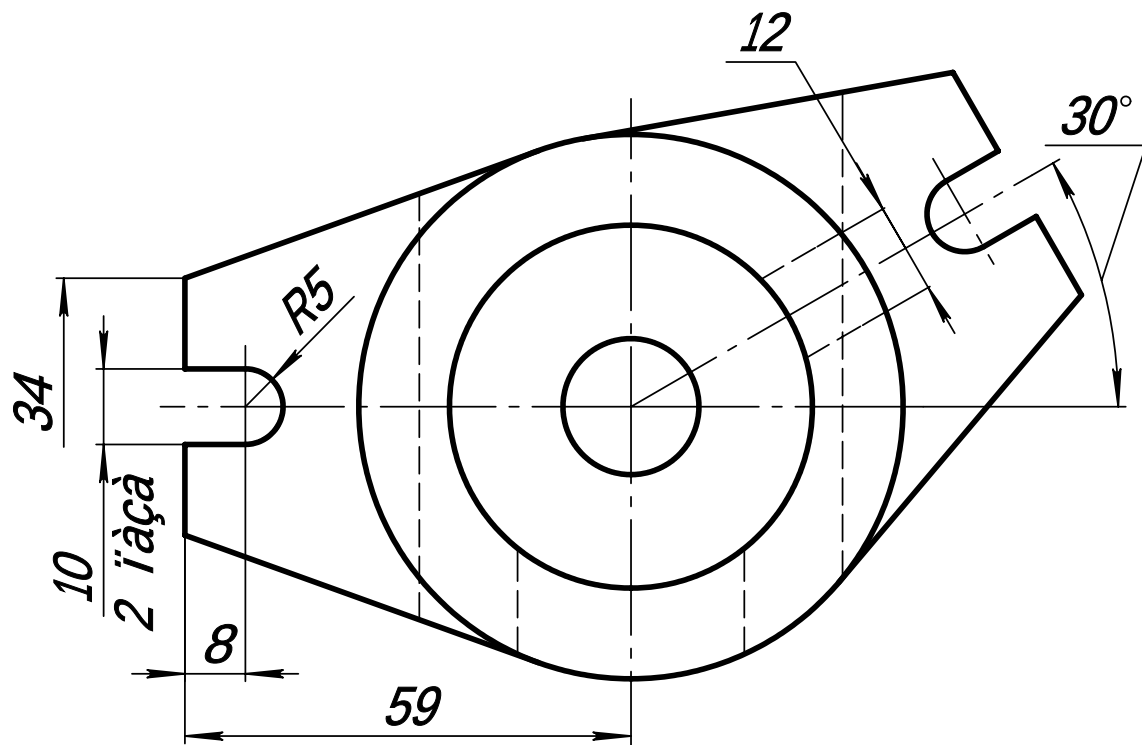
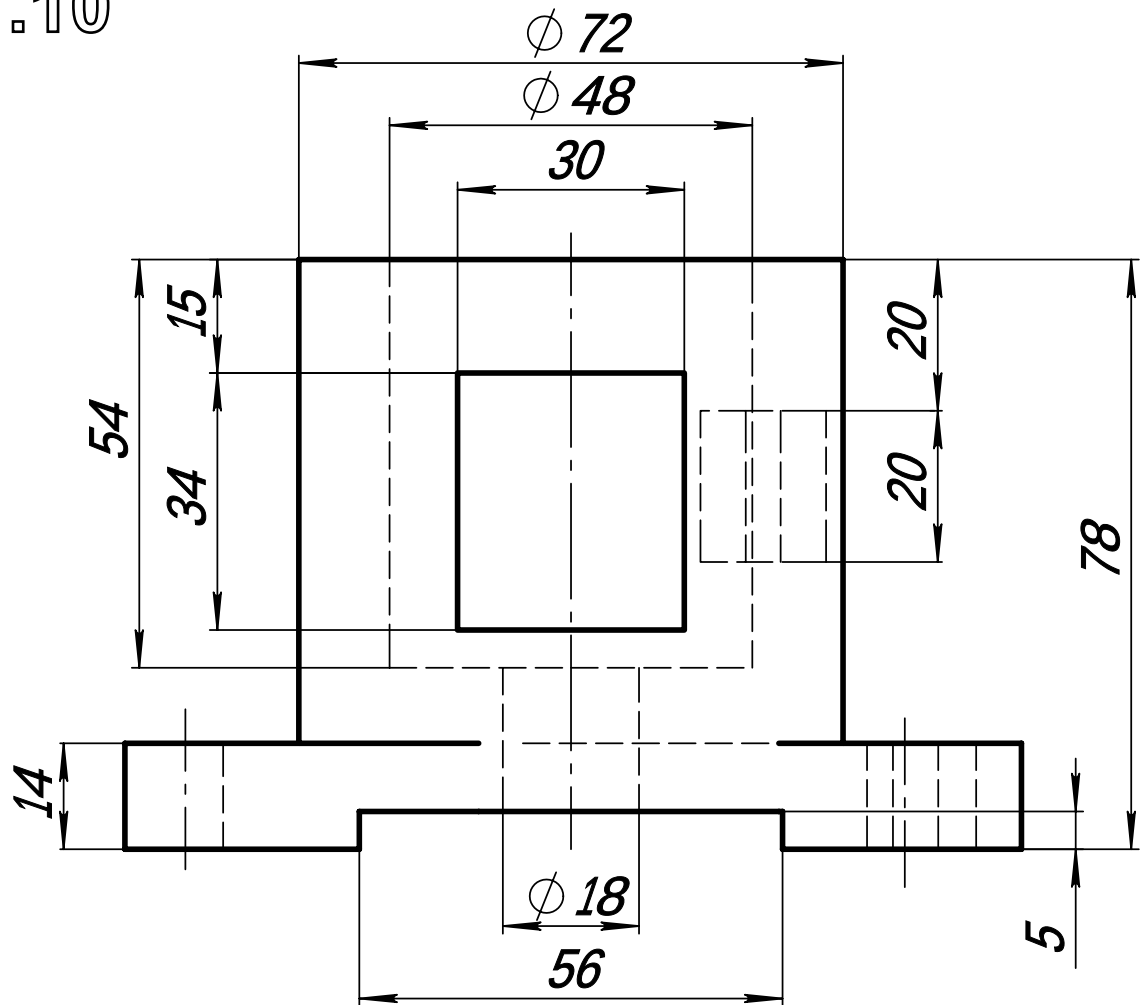


4T.09



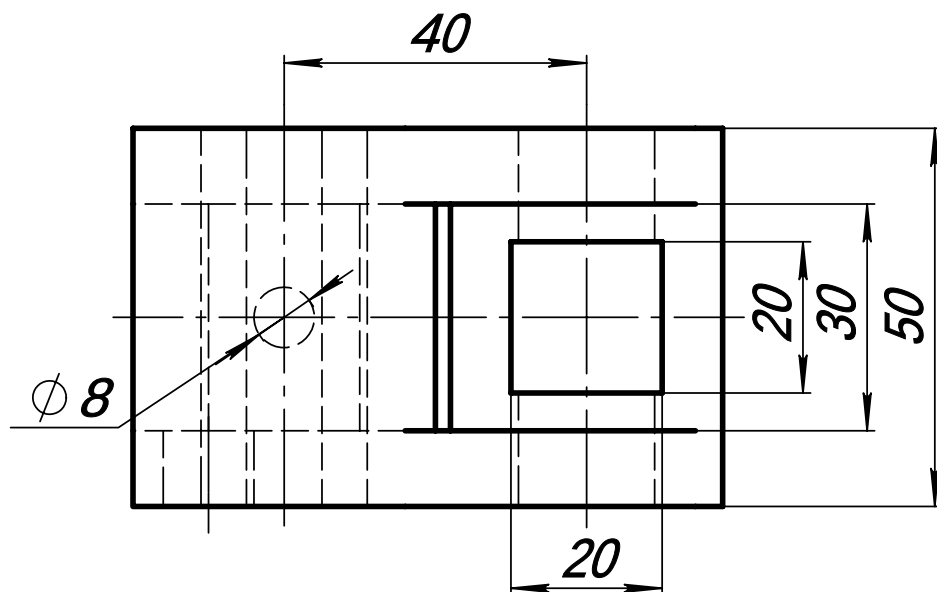
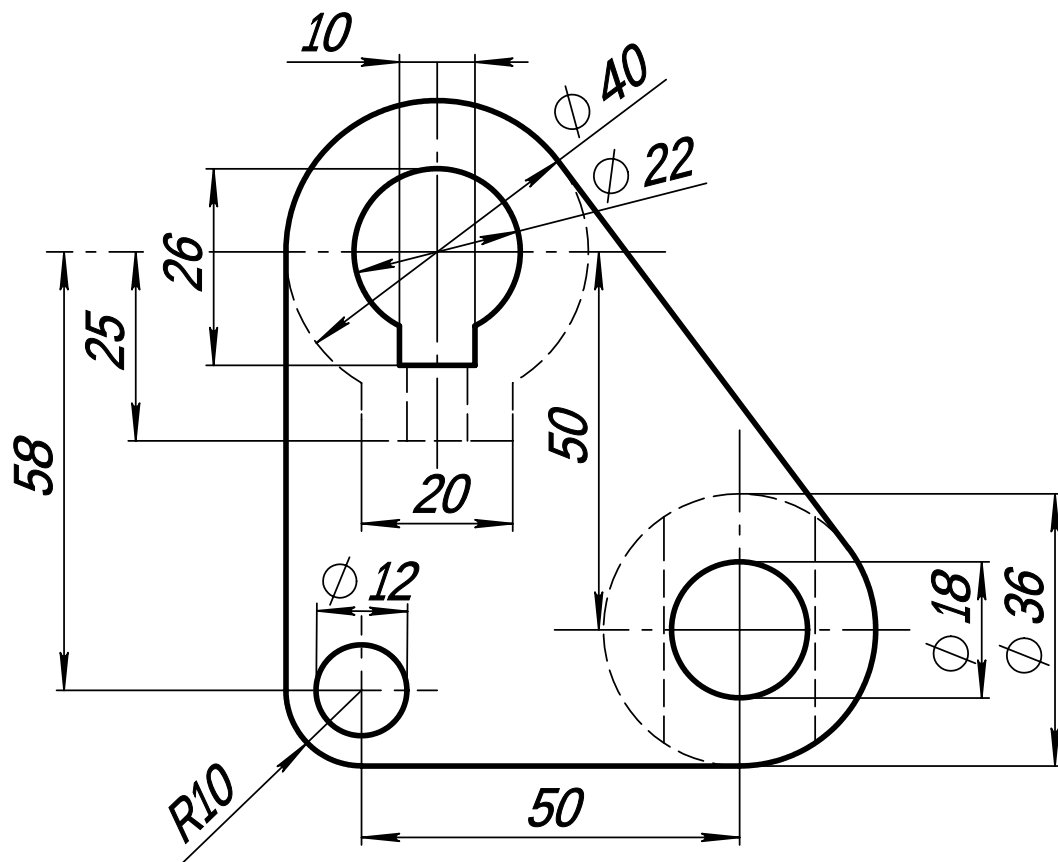


4T.10



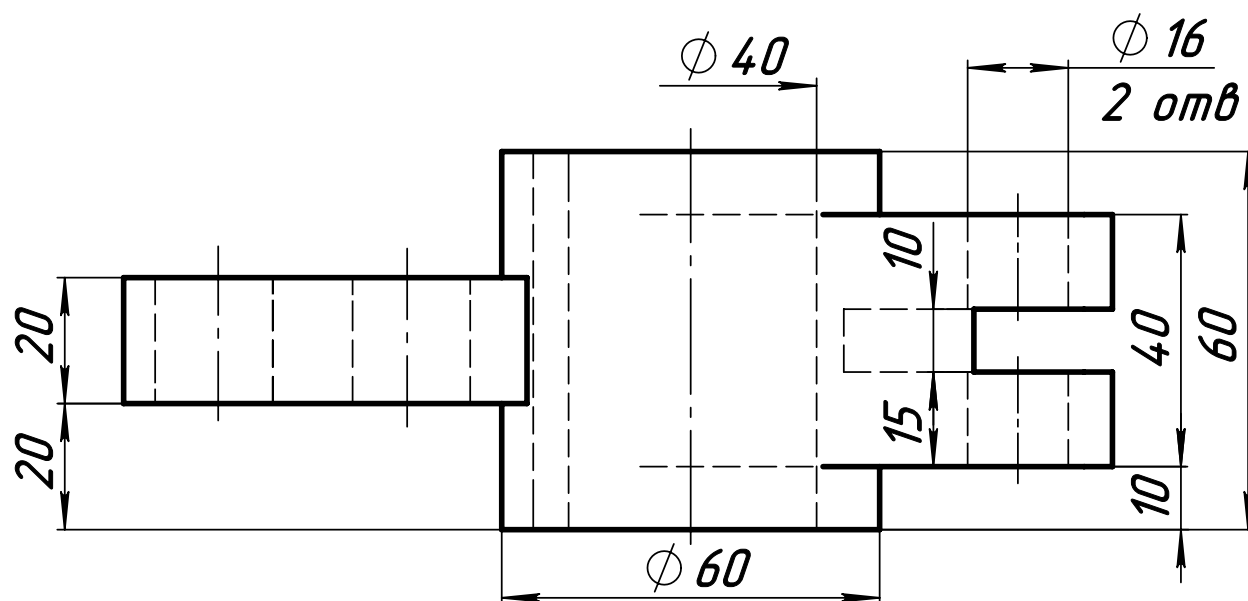


4T.11



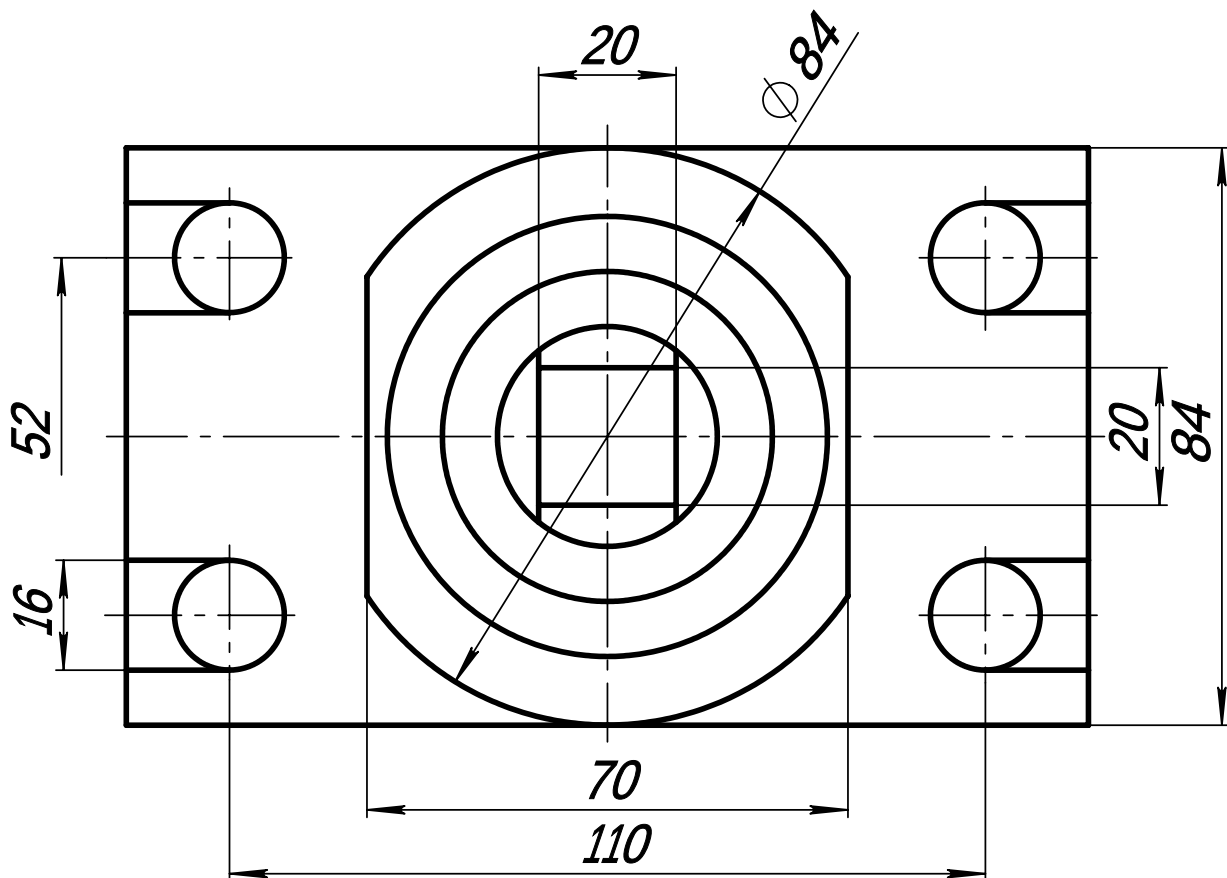
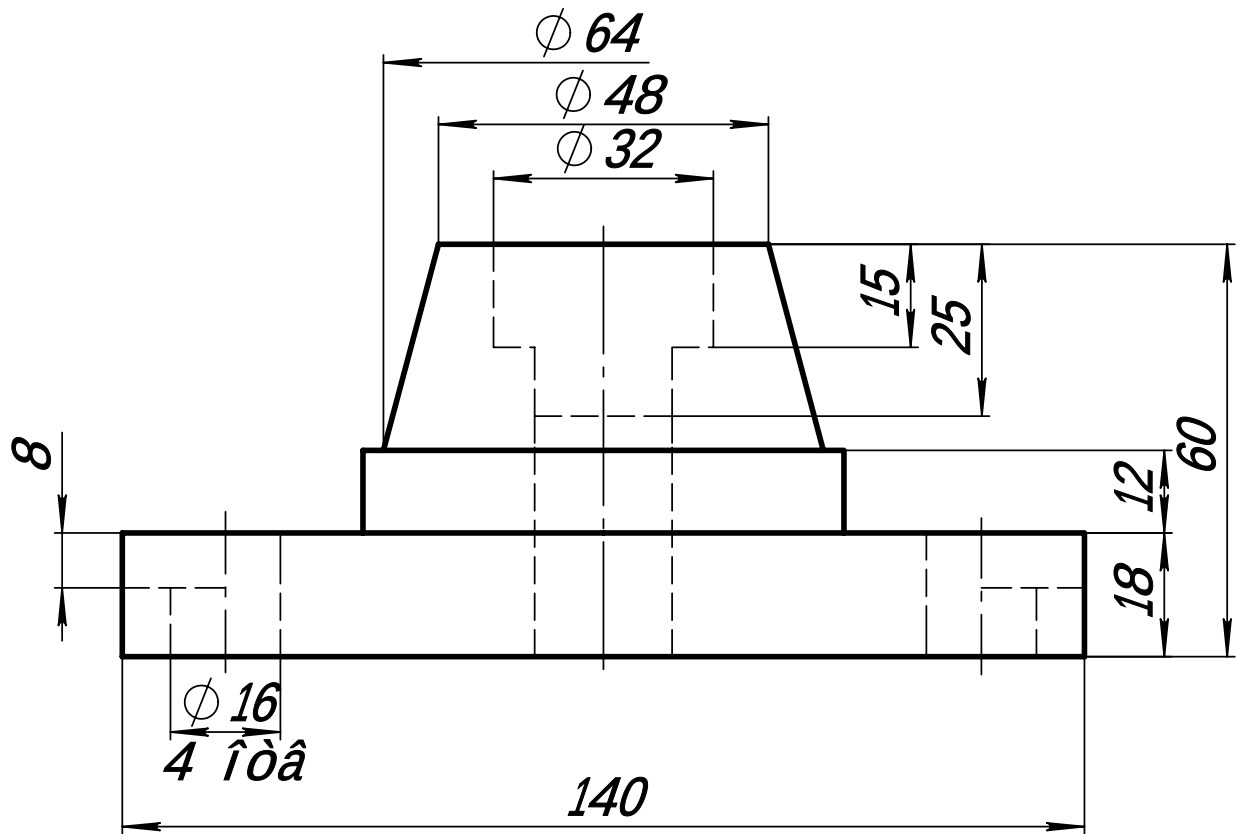


4T.12



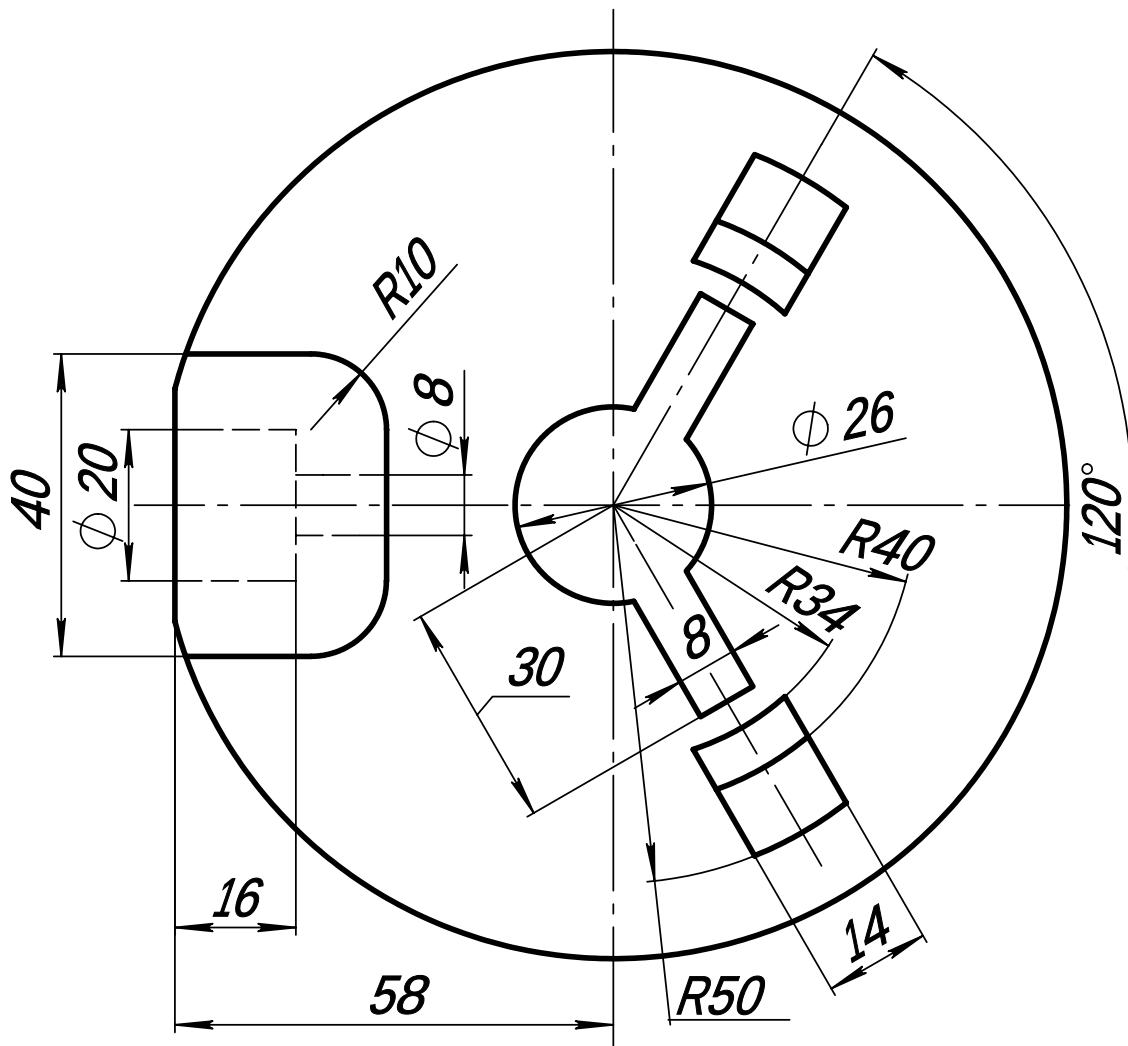
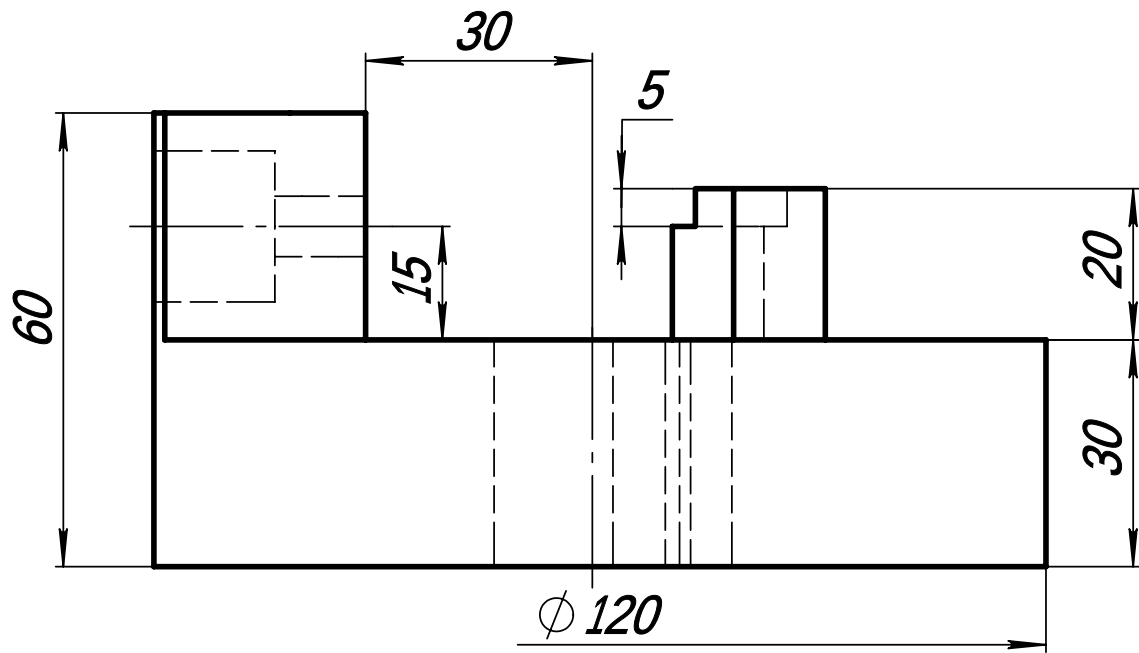


4T.13



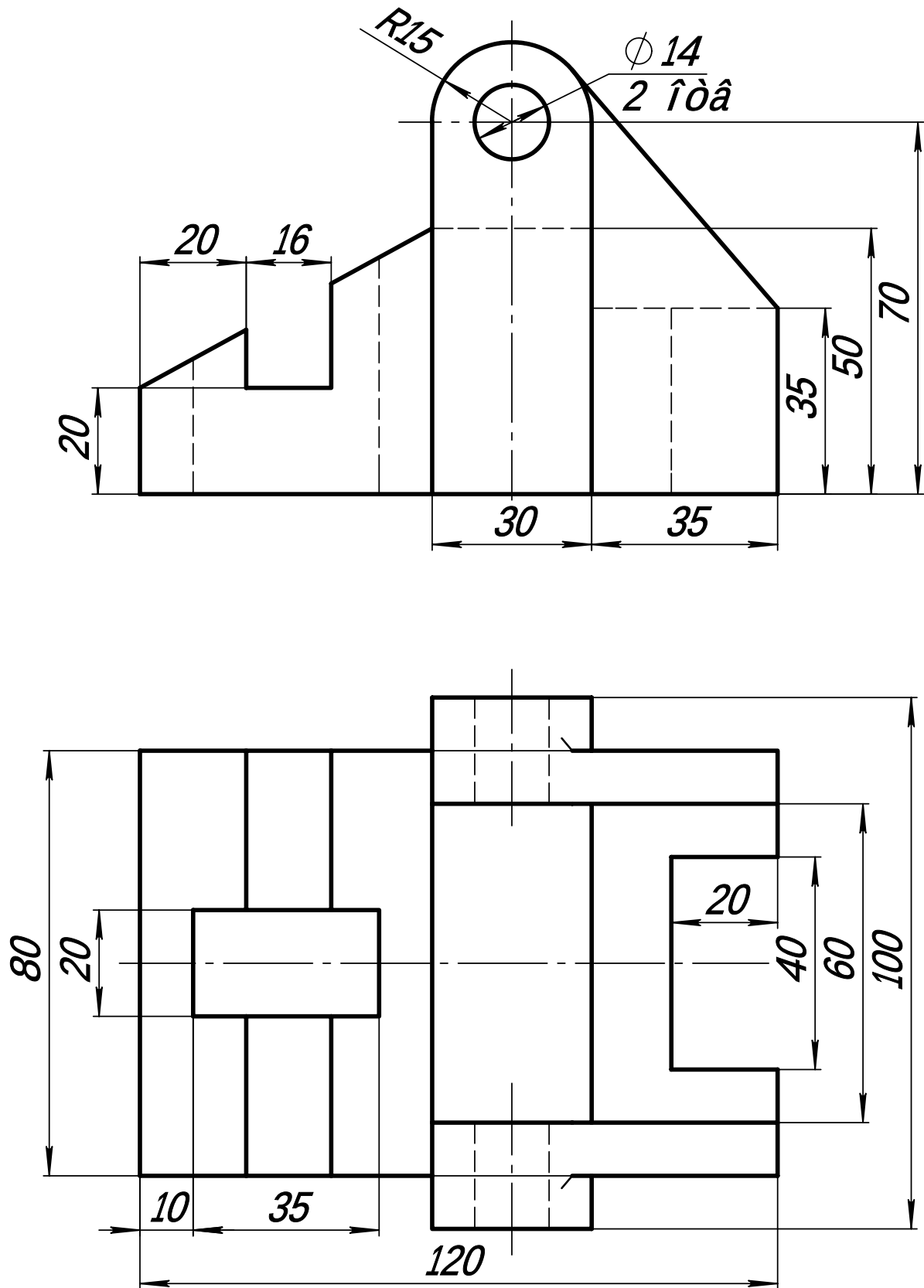


4T.14



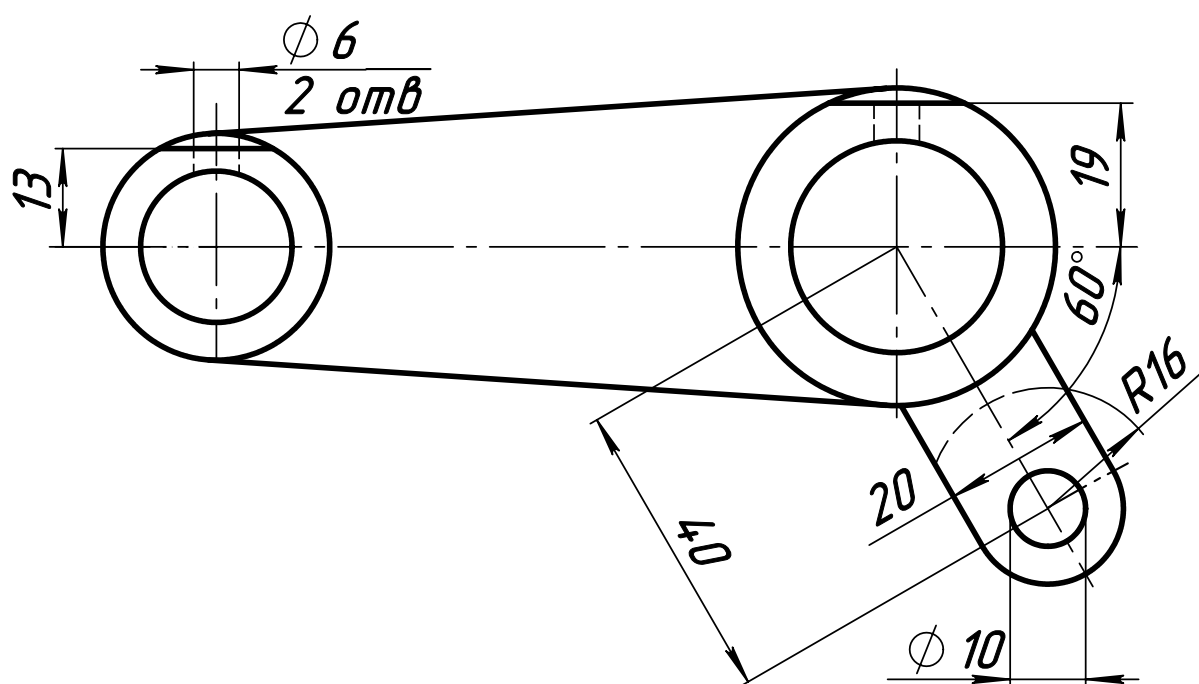
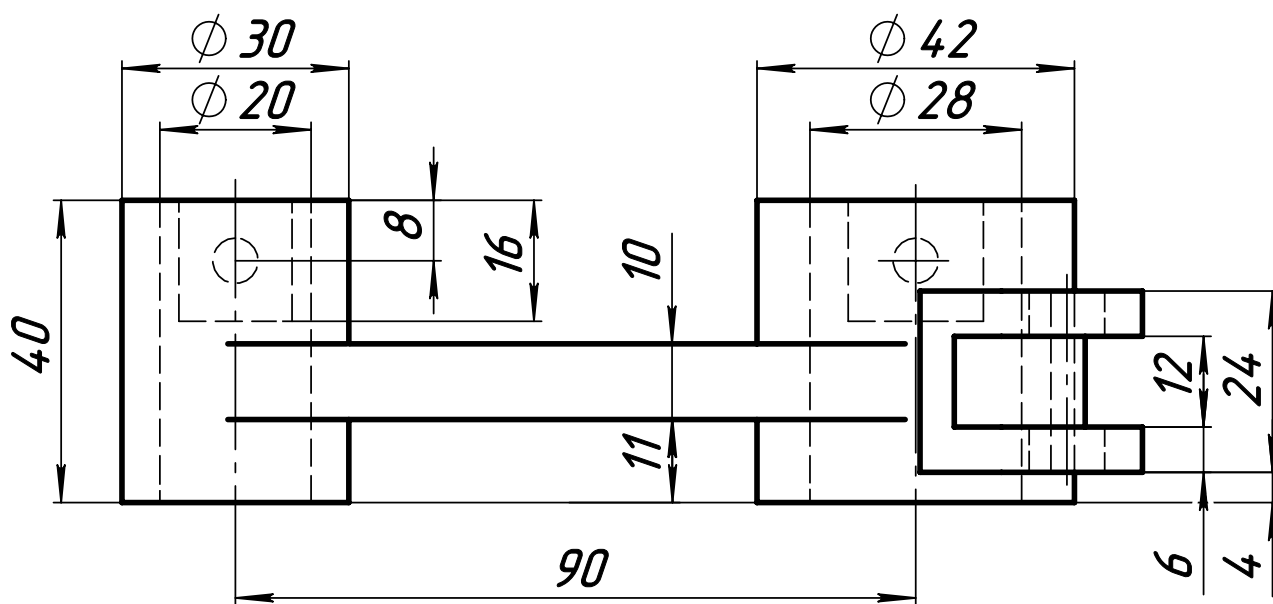


4T.15



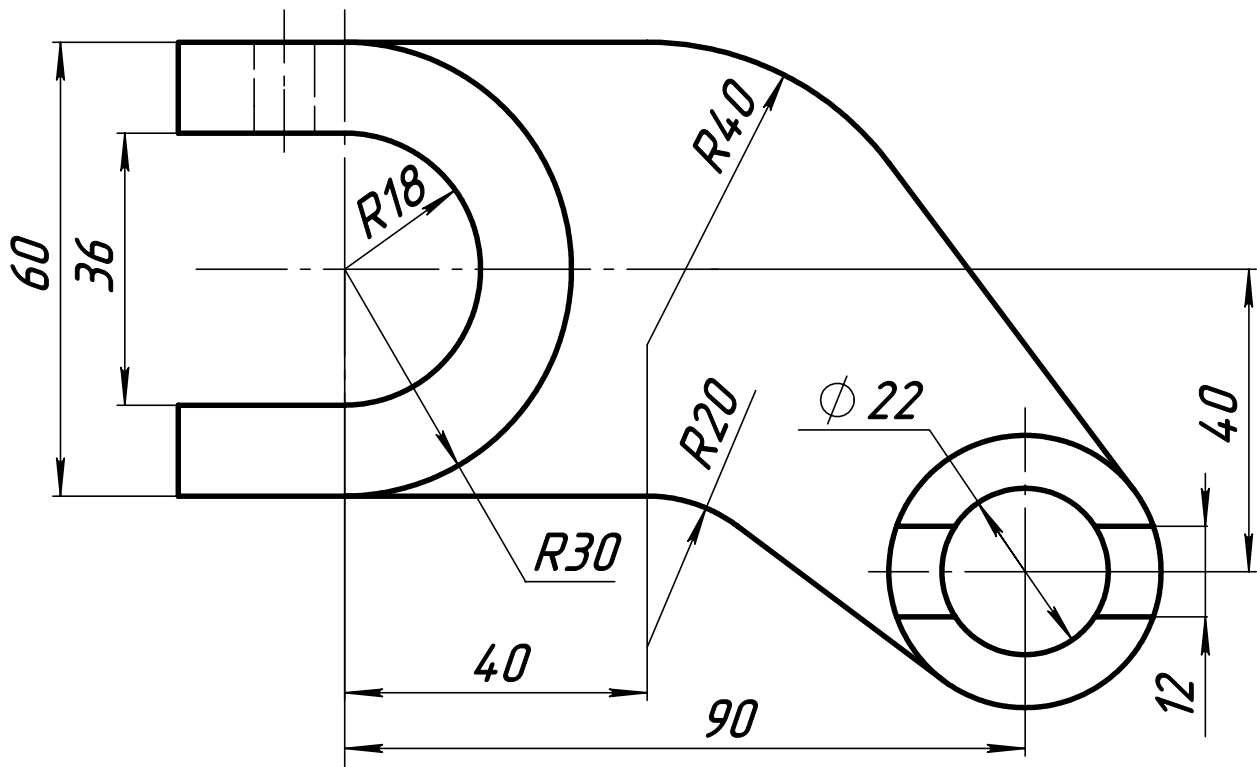
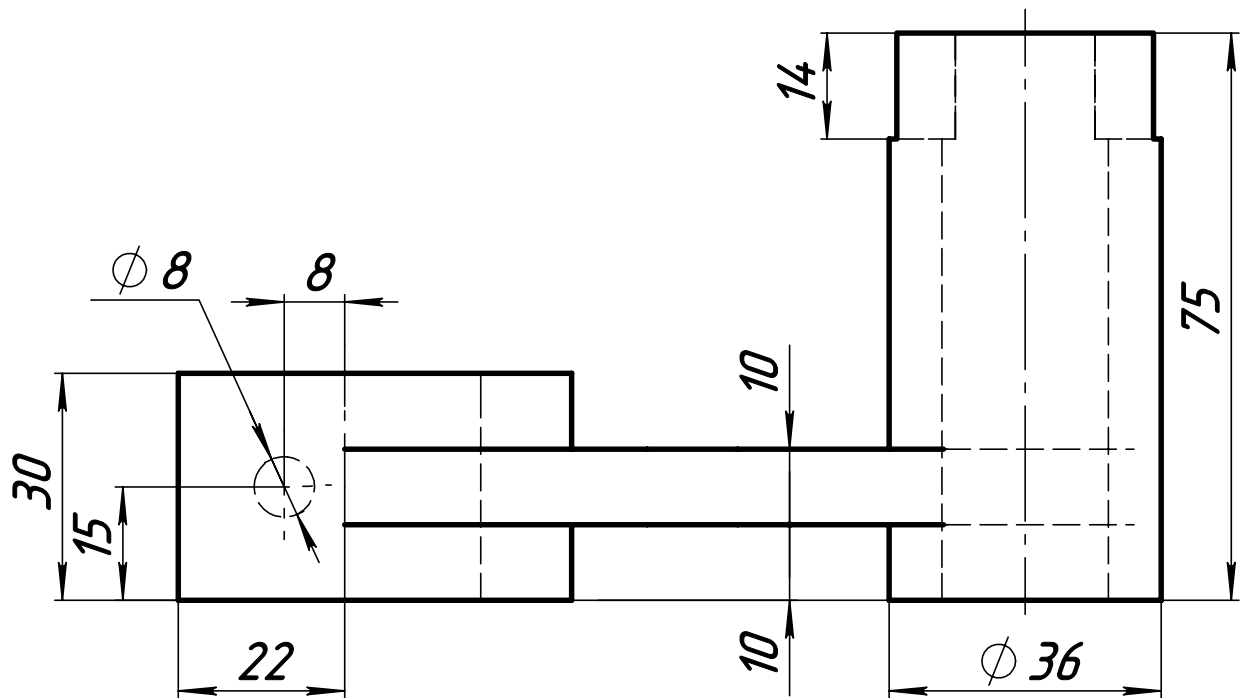


4T.16



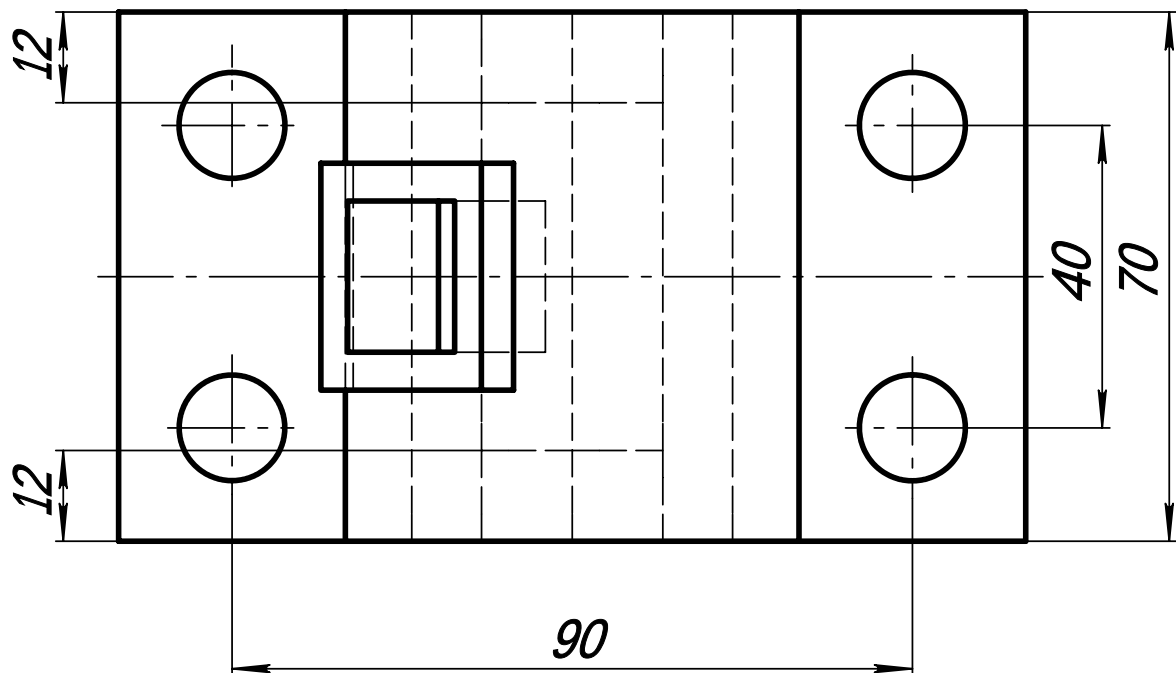
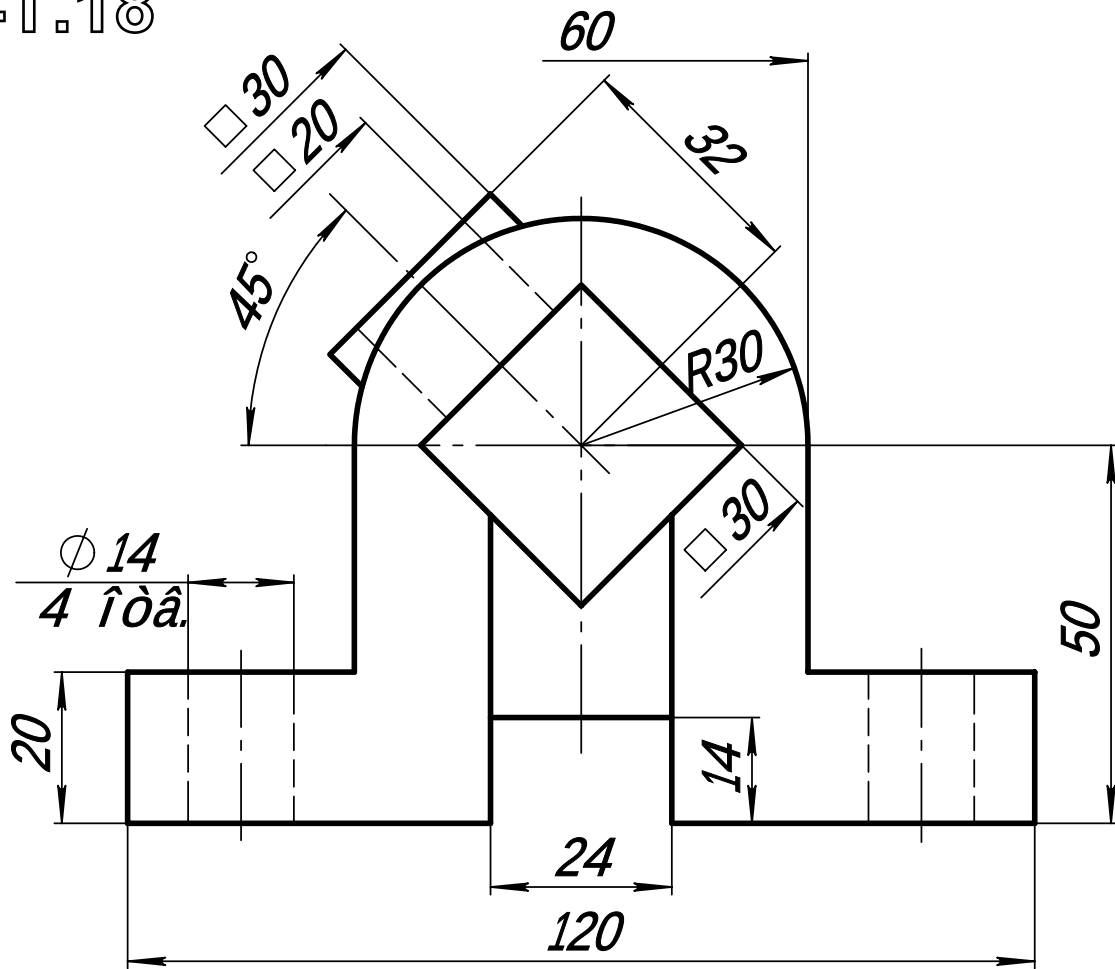


4T.17



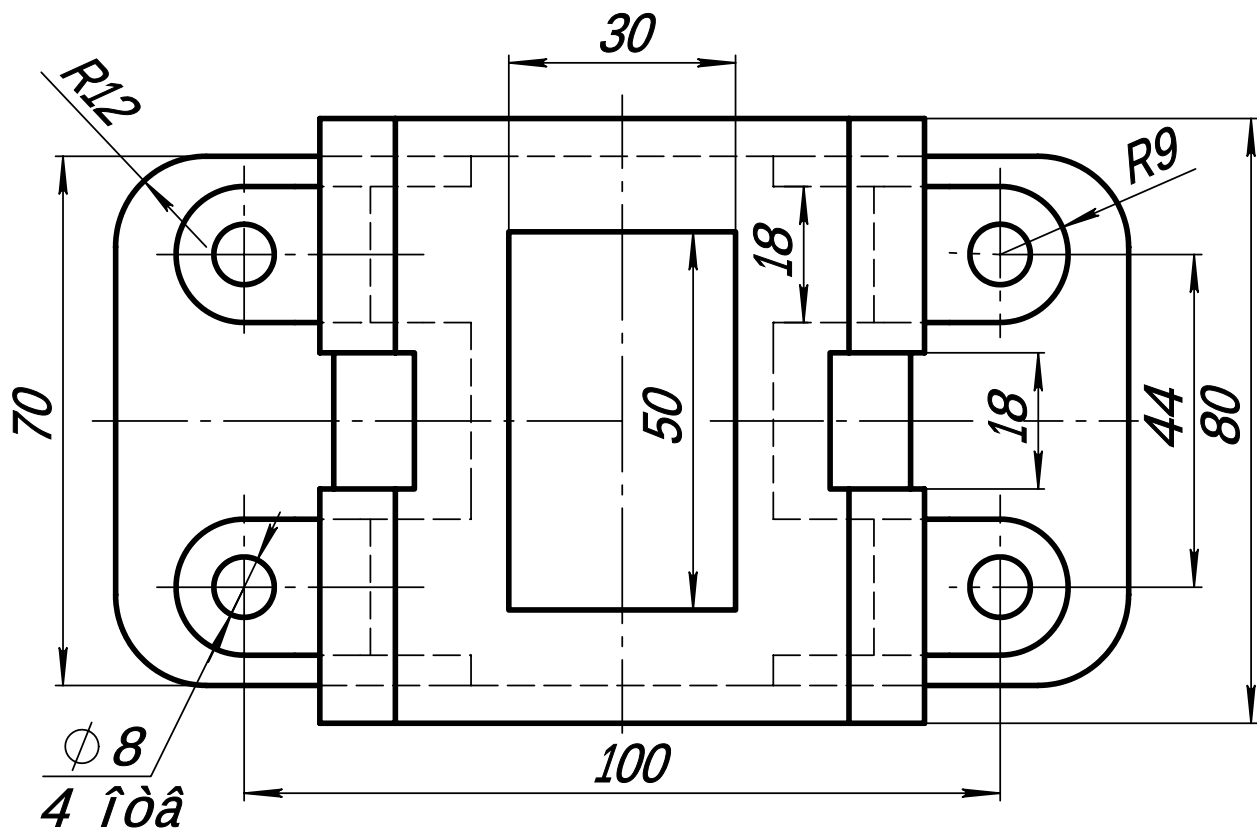
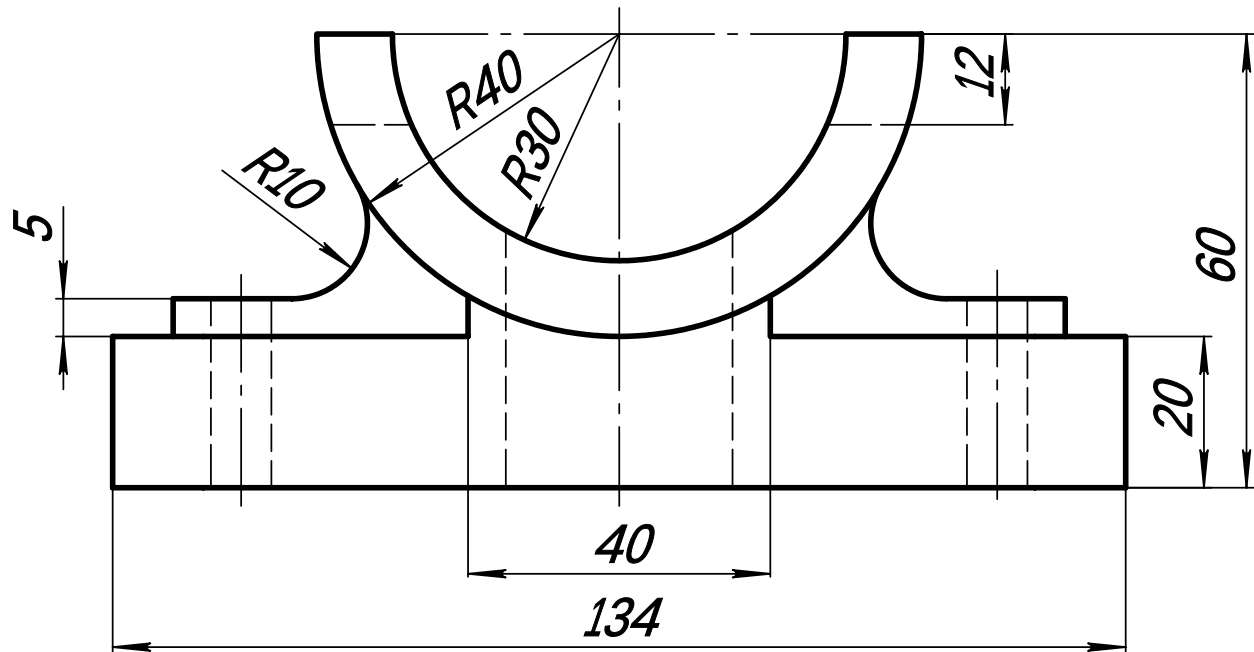


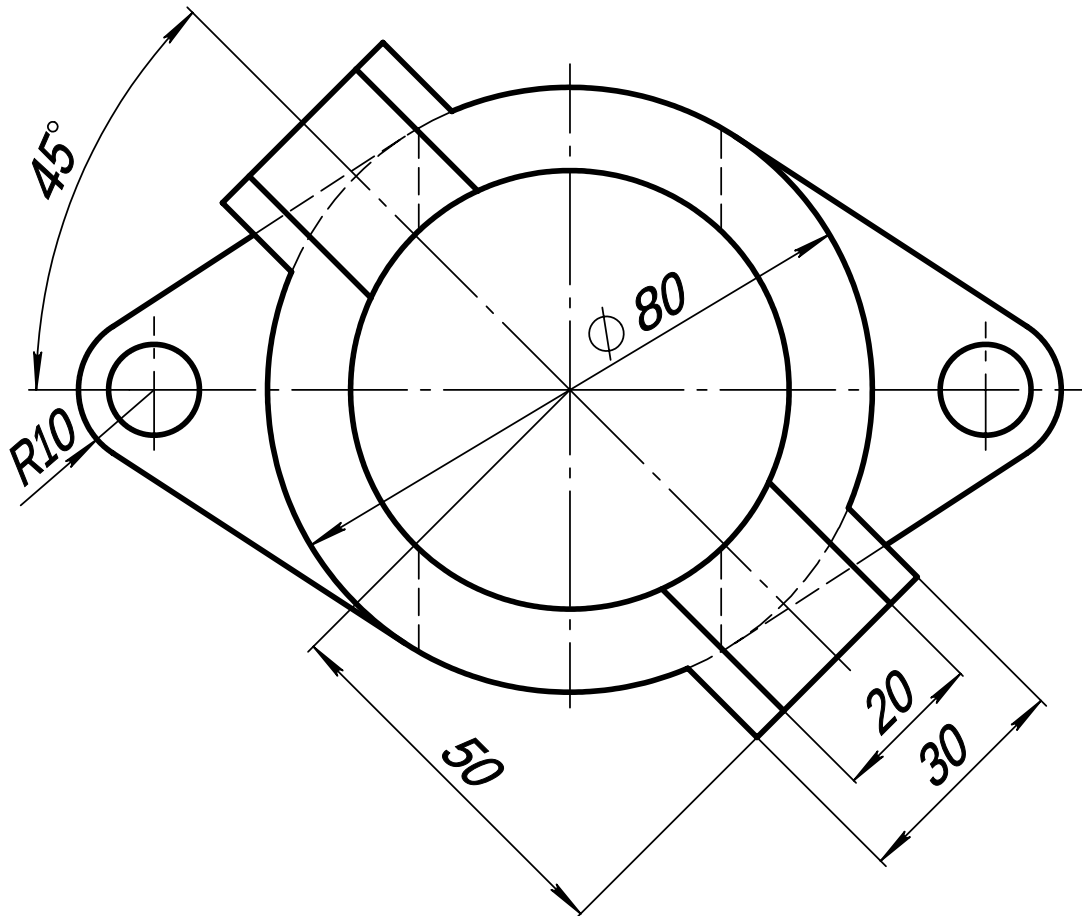
4T.18





4T.19





Technical drawing of a mechanical part, showing front and top views with dimensions in mm.

Front View (Top):

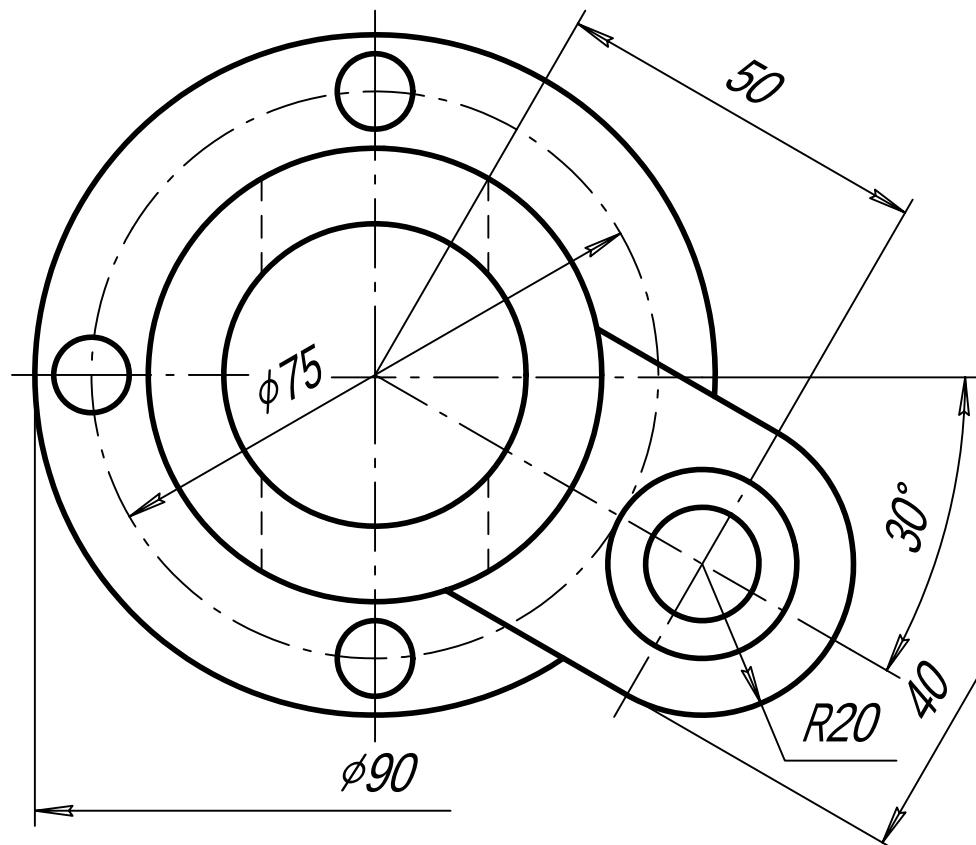
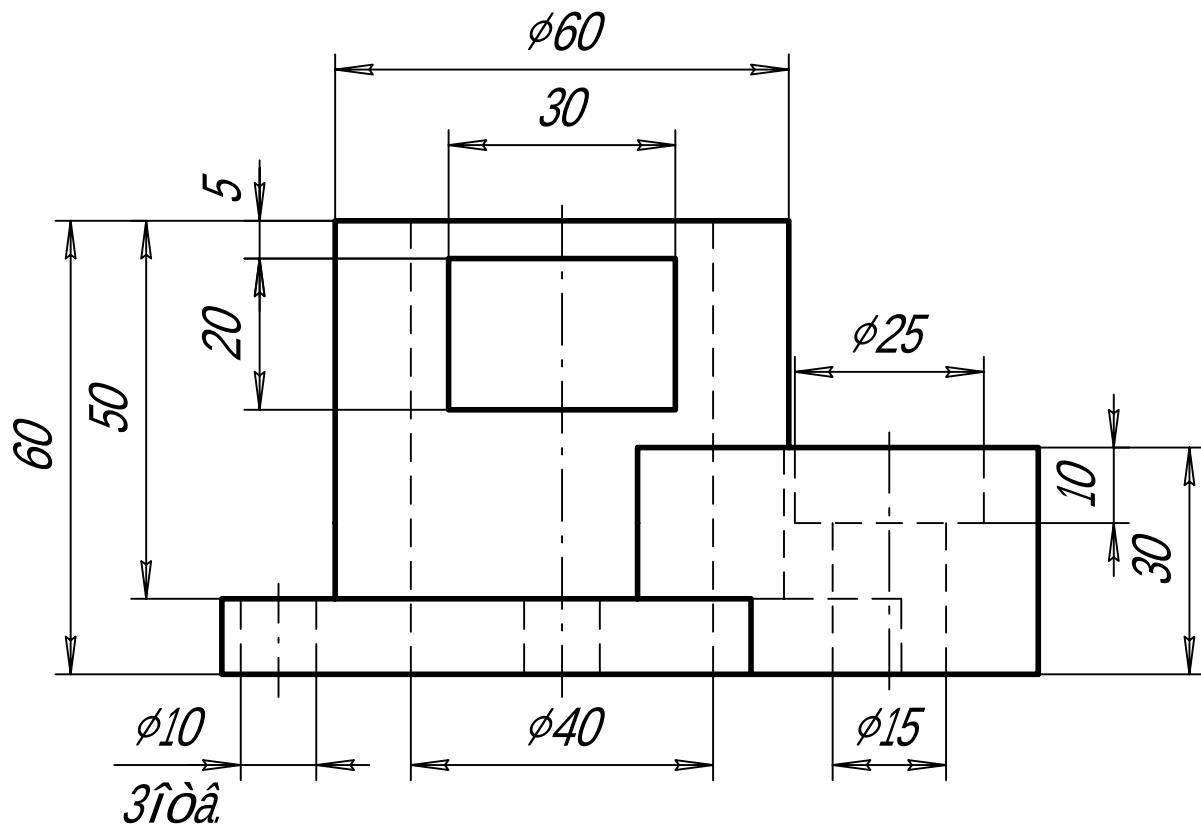
- Overall width: 110 mm
- Overall height: 50 mm
- Left flange width: 16 mm
- Left flange thickness: 3 mm
- Top flange width: 50 mm
- Top flange thickness: 3 mm
- Top flange hole diameter: $\phi 40$
- Top flange hole spacing: 26 mm (center-to-center), 12 mm (edge-to-center)
- Top flange hole depth: 8 mm
- Top flange hole spacing from center: 10 mm
- Top flange hole diameter: $\phi 18$
- Top flange hole spacing: 3 mm (edge-to-center)
- Top flange hole diameter: $\phi 30$
- Top flange hole spacing: 14 mm (edge-to-center)
- Top flange hole diameter: $\phi 8$
- Top flange hole spacing: 3 mm (edge-to-center)

Top View (Bottom):

- Overall width: 70 mm
- Overall height: 44 mm
- Left flange width: 16 mm
- Left flange thickness: 3 mm
- Left flange hole diameter: $\phi 12$
- Left flange hole spacing: 2 mm (edge-to-center)
- Left flange hole diameter: $\phi 50$
- Left flange hole spacing: 10 mm (edge-to-center)
- Left flange hole diameter: $\phi 30$
- Left flange hole spacing: 14 mm (edge-to-center)
- Left flange hole diameter: $\phi 8$
- Left flange hole spacing: 3 mm (edge-to-center)
- Left flange hole diameter: $\phi 18$
- Left flange hole spacing: 10 mm (edge-to-center)
- Left flange hole diameter: $\phi 30$
- Left flange hole spacing: 14 mm (edge-to-center)
- Left flange hole diameter: $\phi 8$
- Left flange hole spacing: 3 mm (edge-to-center)

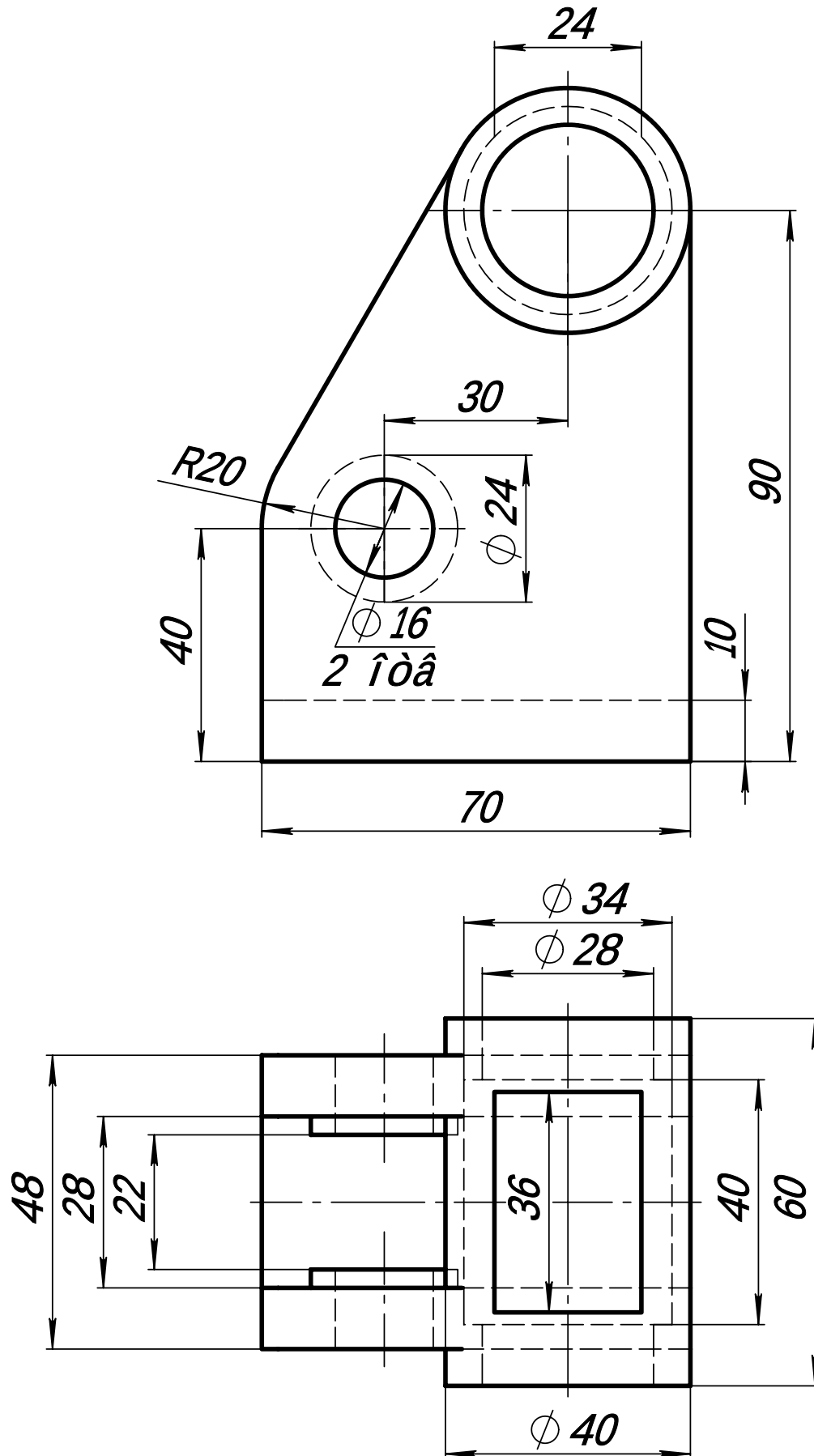


4T.22



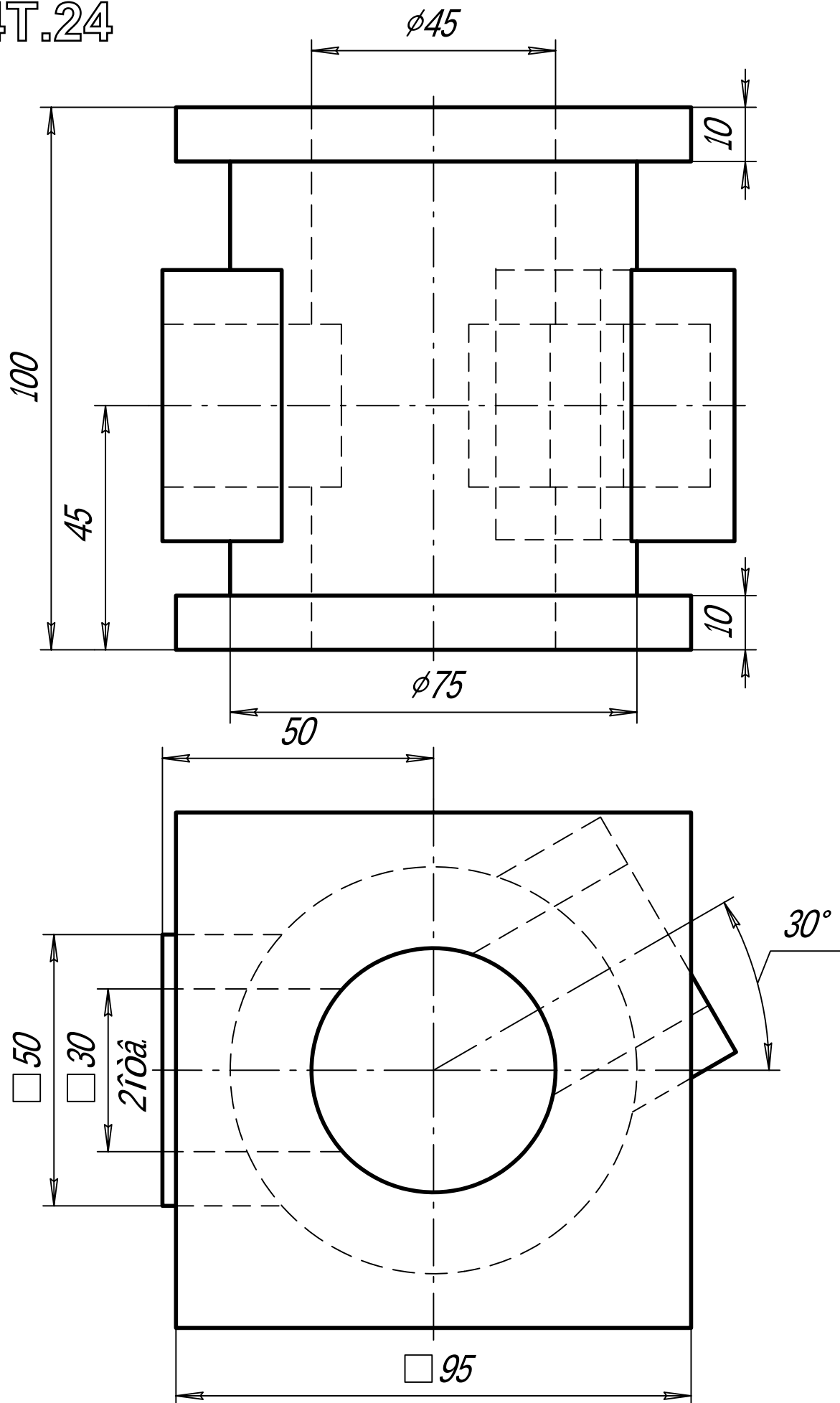


4T.23



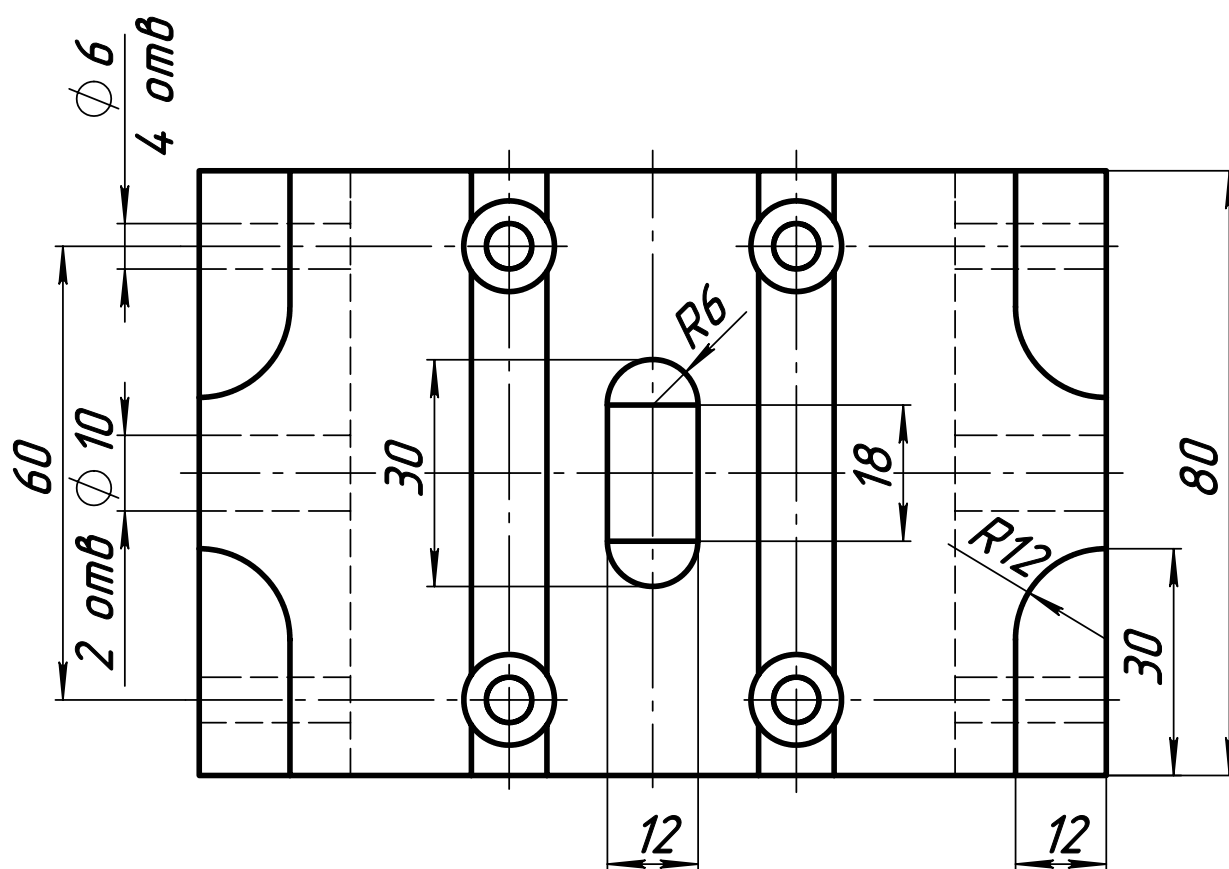
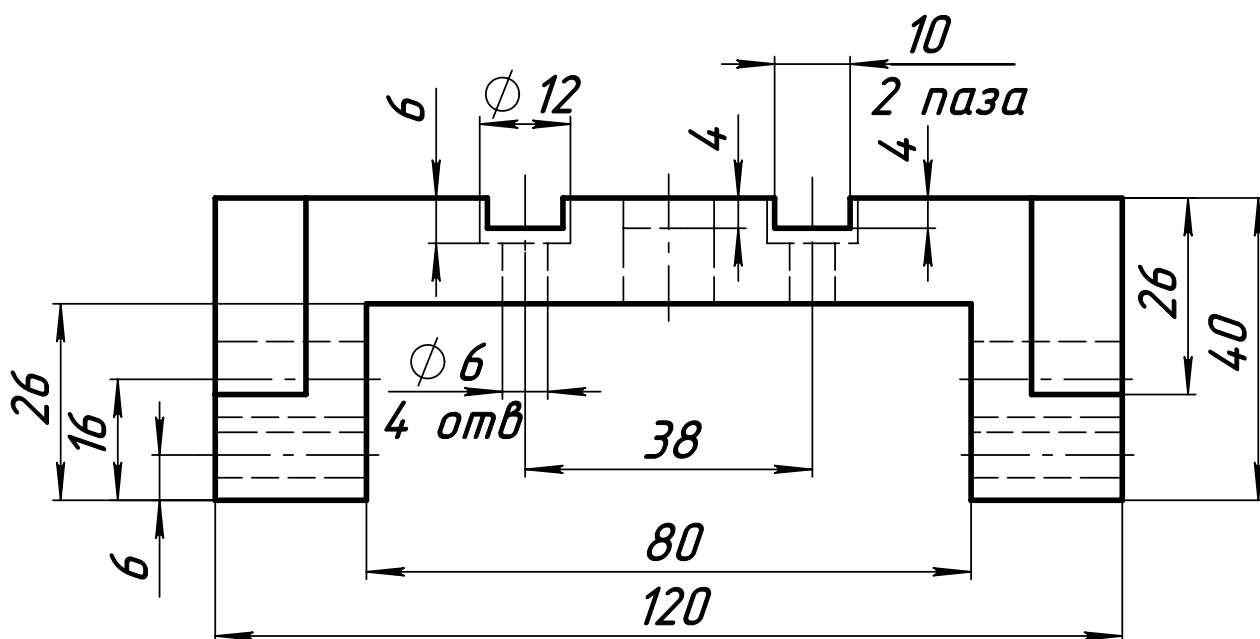


4T.24





4Т.25



Technical drawing of a mechanical part, showing two views: a front view (top) and a top view (bottom).

Front View (Top):

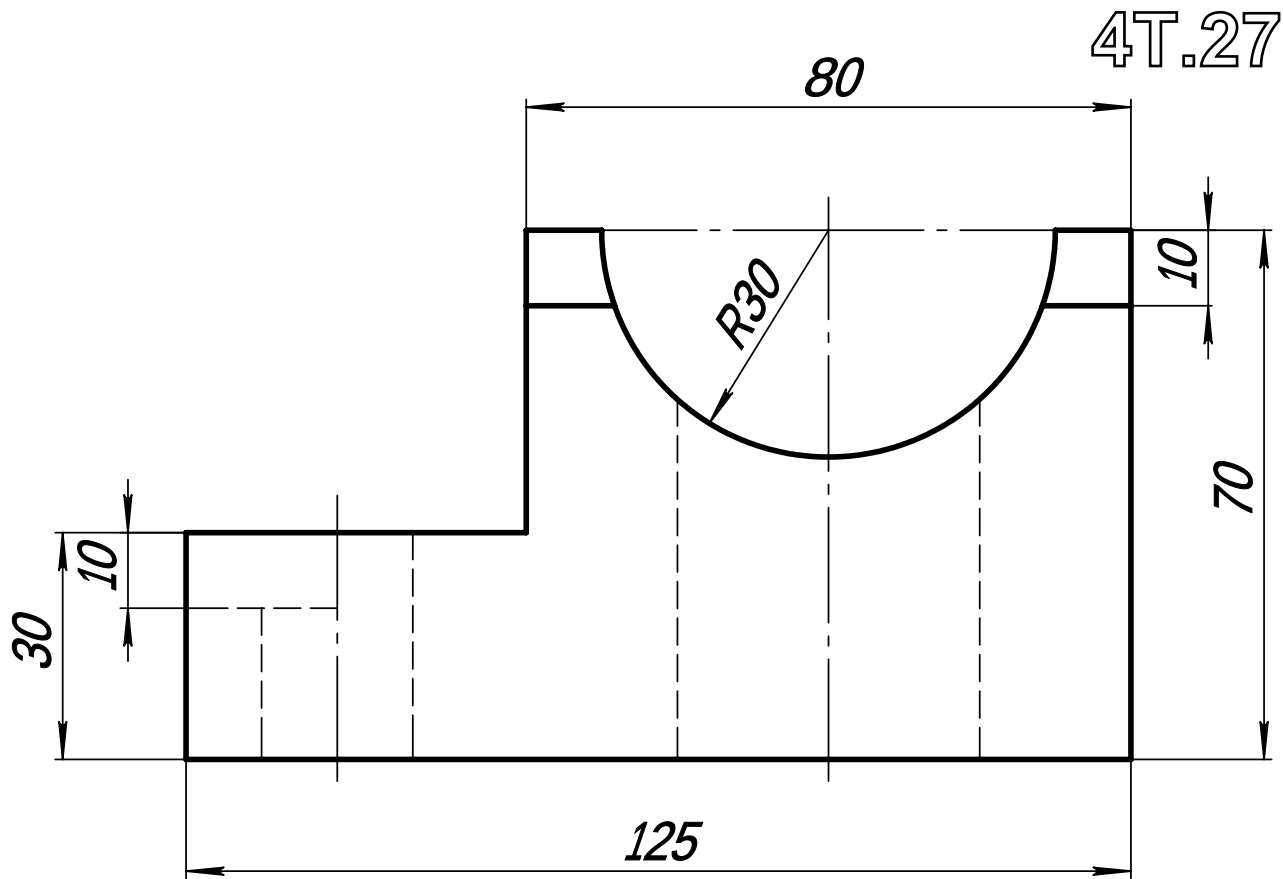
- Overall width: 56
- Radius of the outer semi-circle: R28
- Radius of the inner circular hole: 20
- Distance from the center of the hole to the right edge of the semi-circle: 60

Top View (Bottom):

- Overall diameter: 60
- Inner square hole: 48 (indicated by $\phi 48$)
- Angle of the square hole relative to the horizontal: 30°

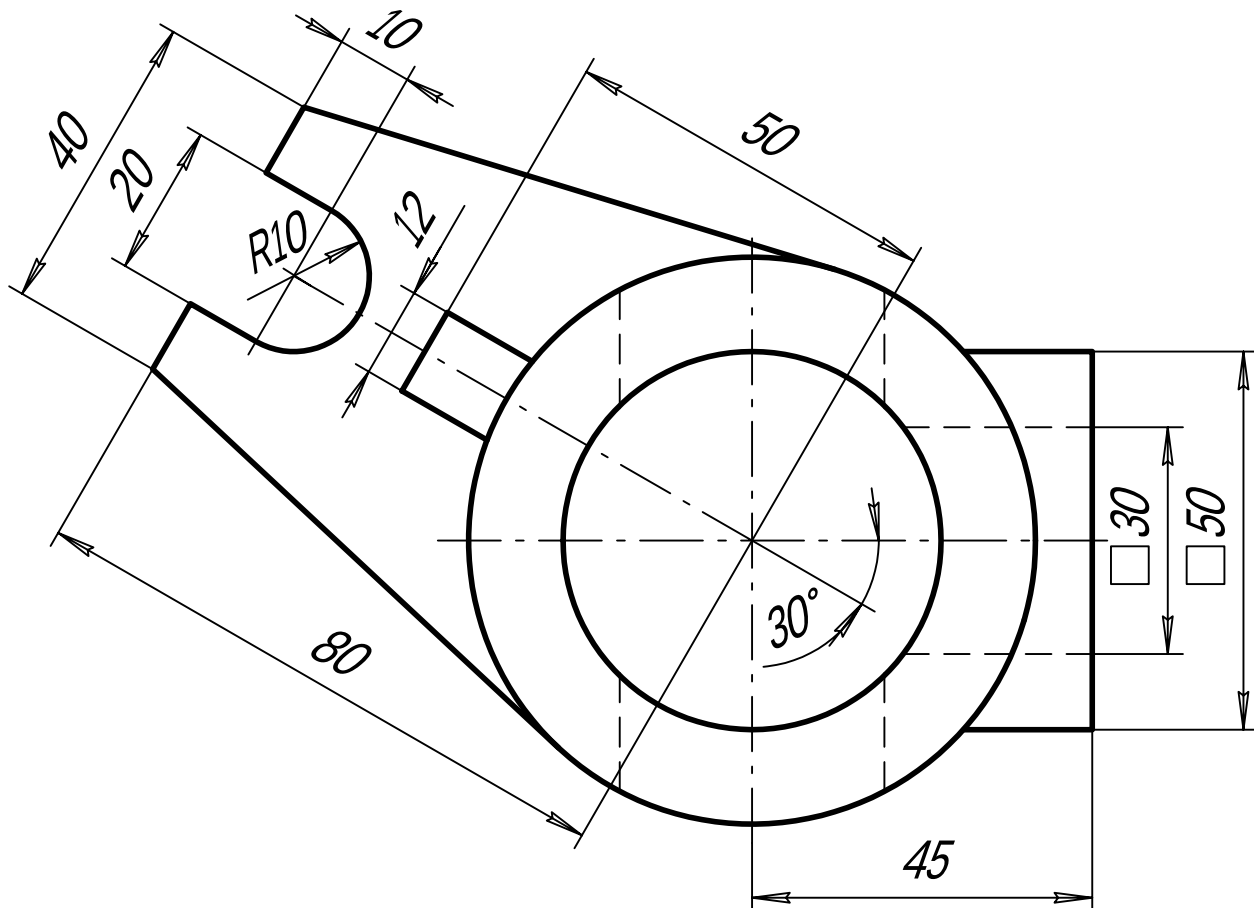
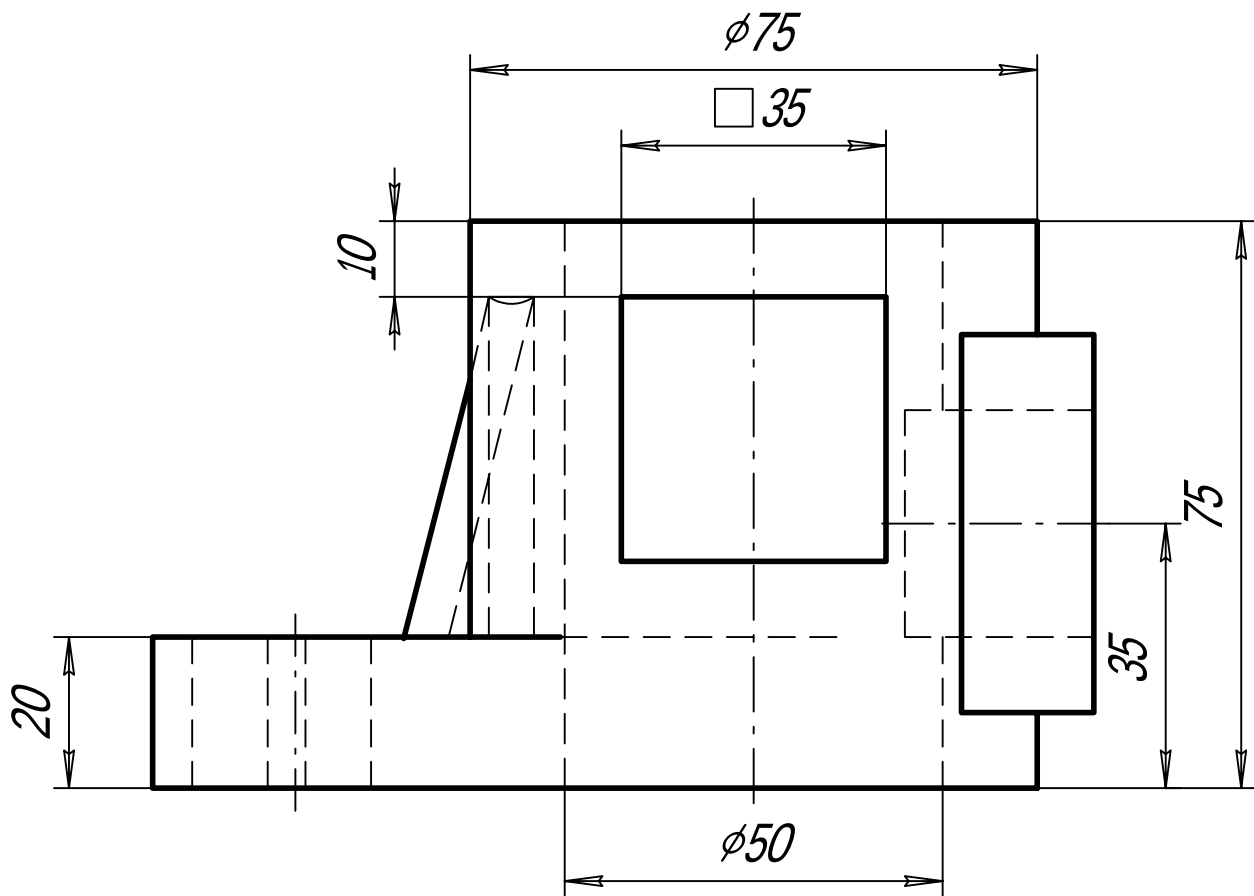


4T.27



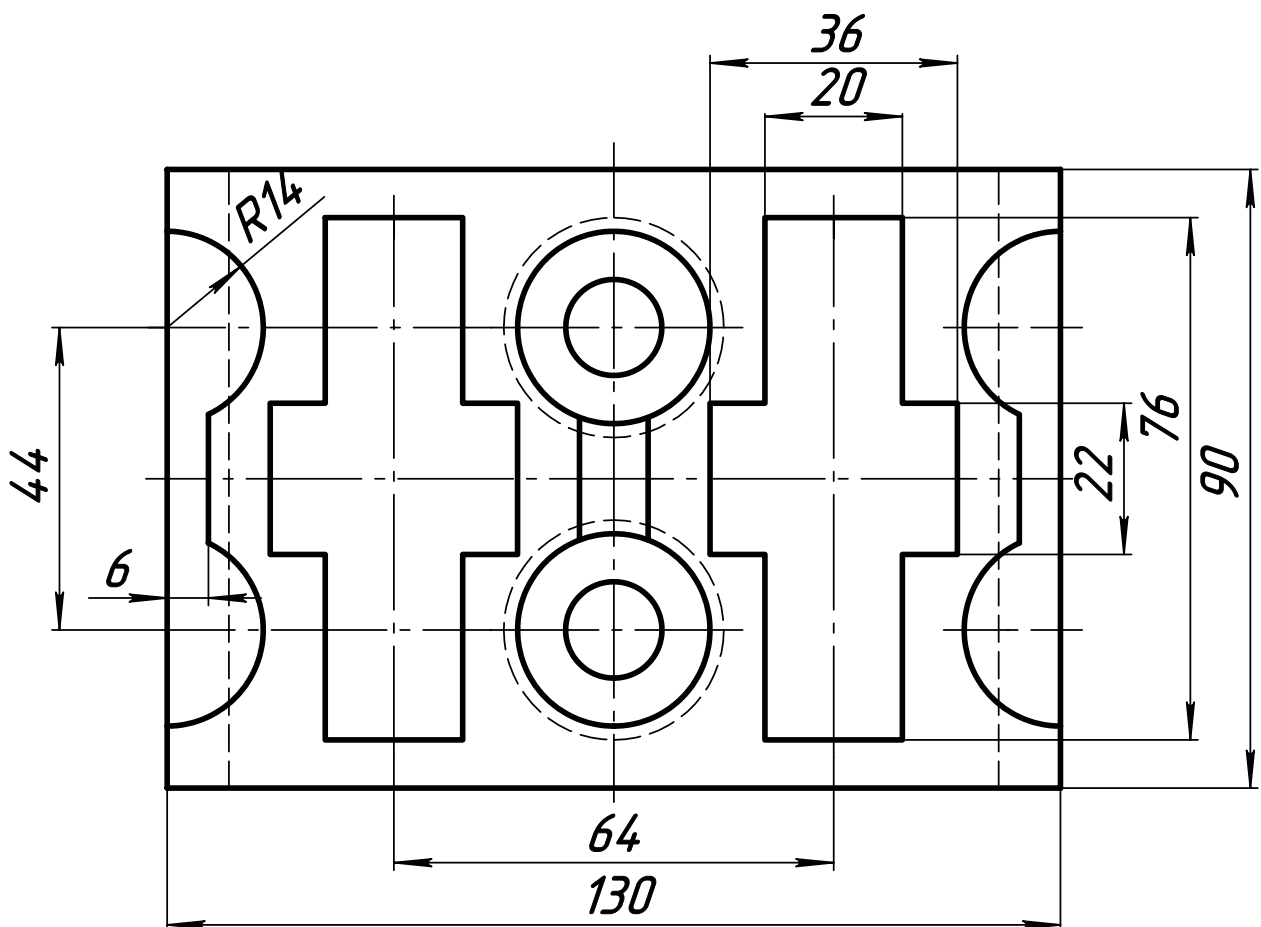
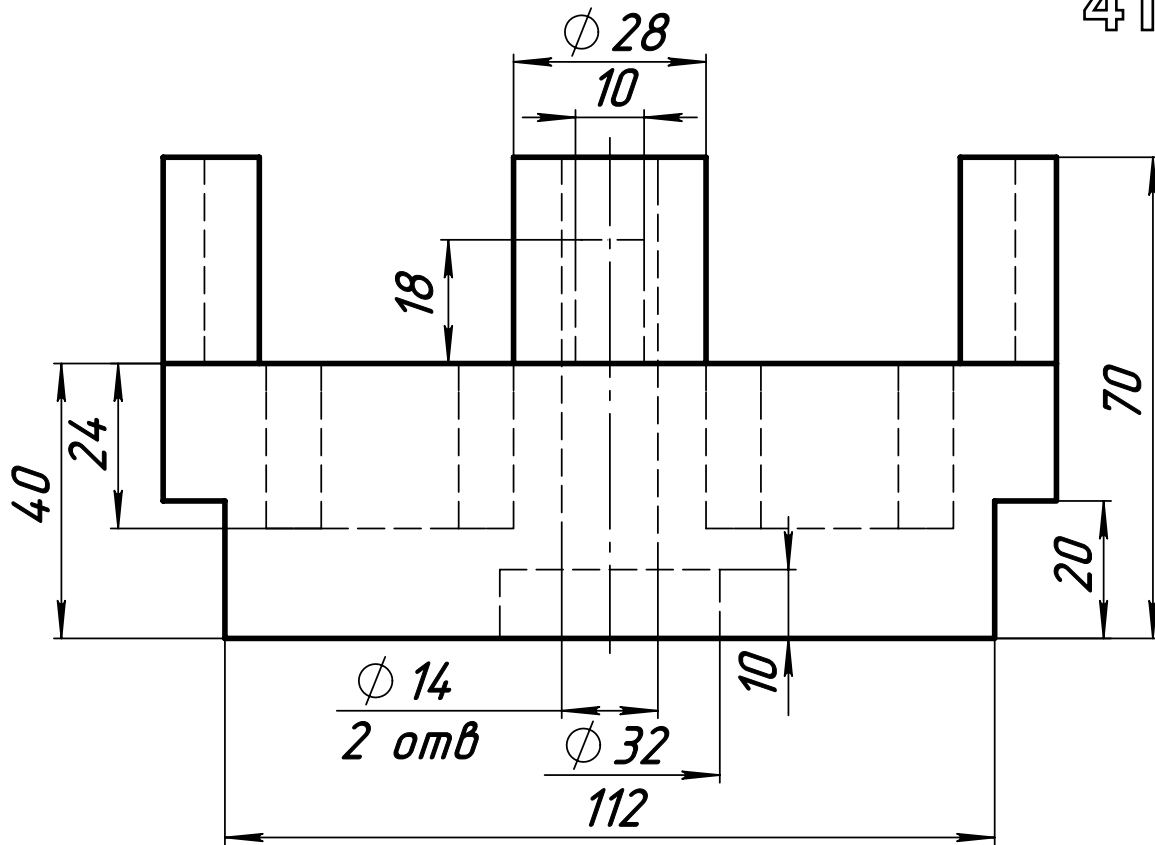


4T.28



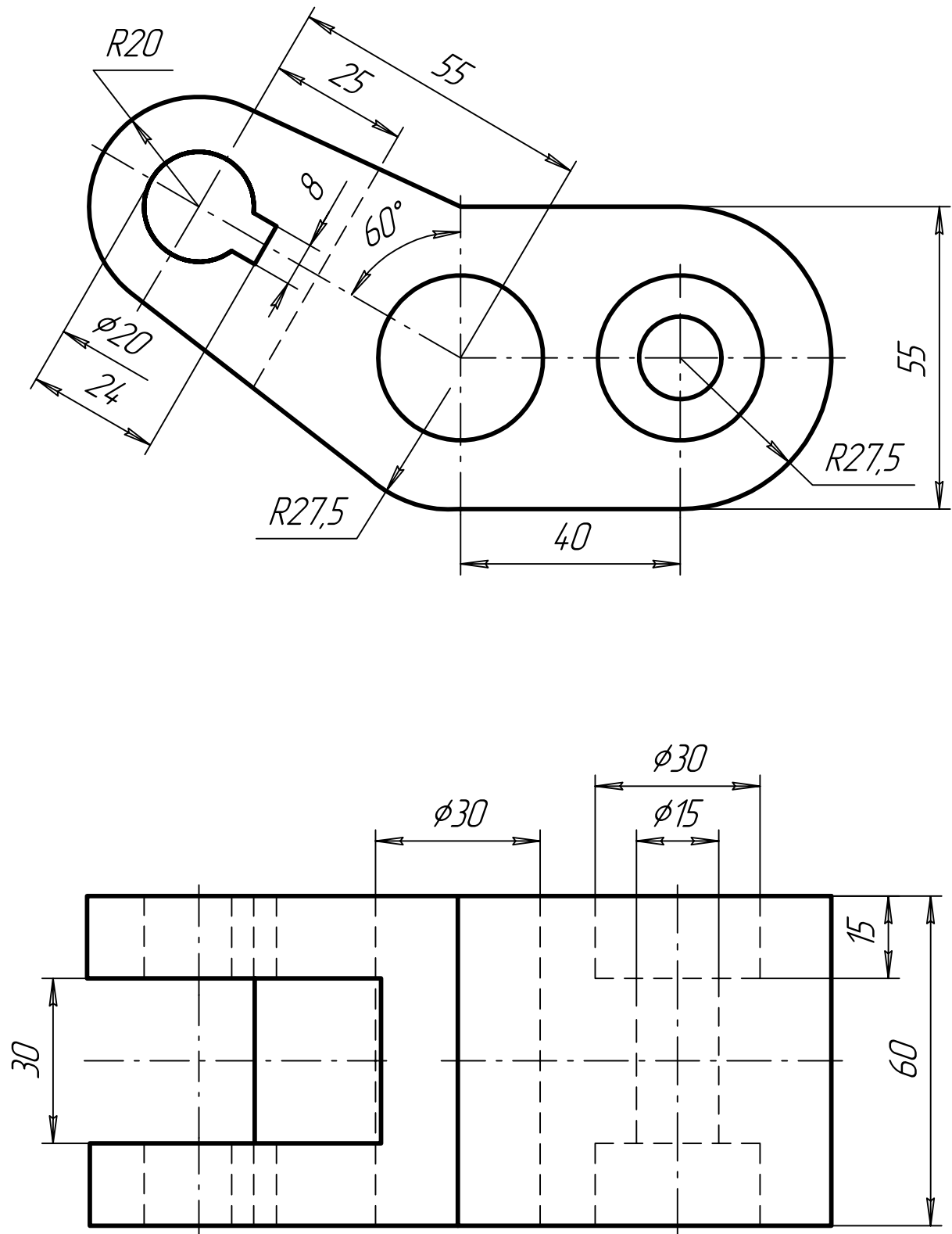


4T.29





4T.30



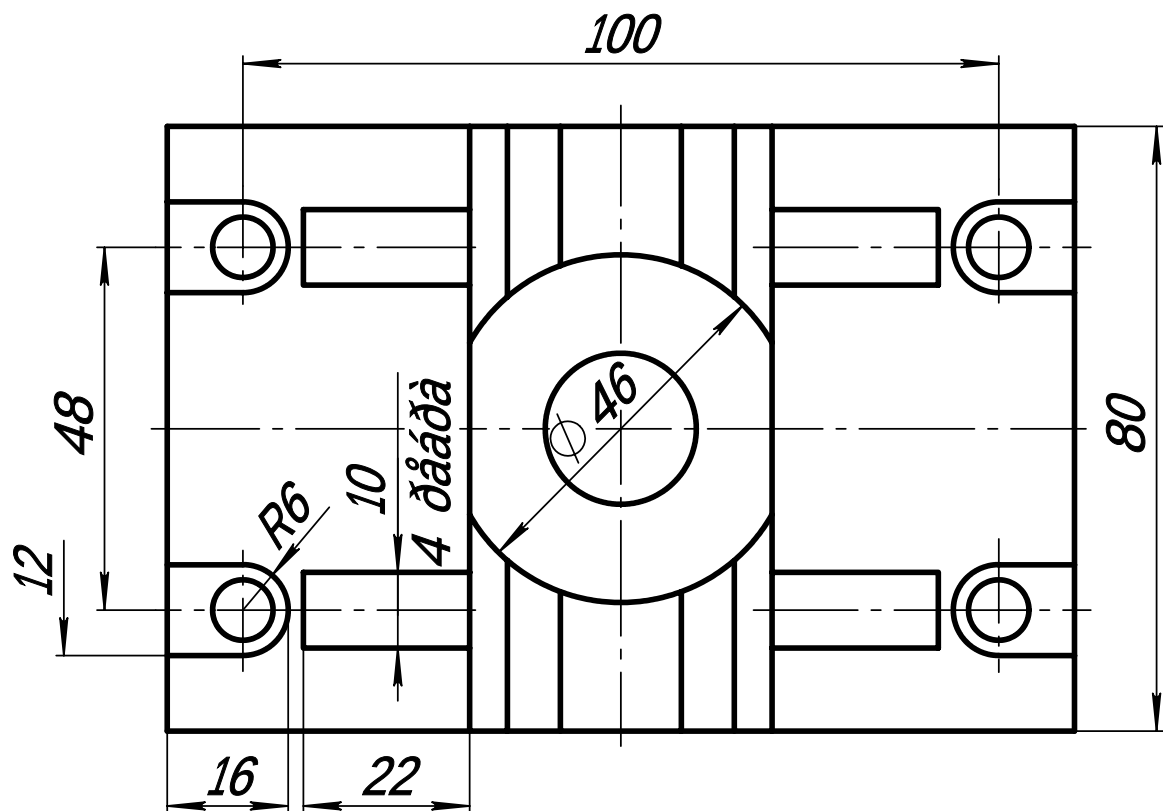
Technical drawing of a mechanical part, showing front and top views with dimensions.

Front View Dimensions:

- Overall height: 60
- Base thickness: 5
- Left sloped side height: 10
- Top width (left section): 40
- Top width (middle section): 30
- Top width (right section): 16
- Right sloped side height: 20
- Right base thickness: 18

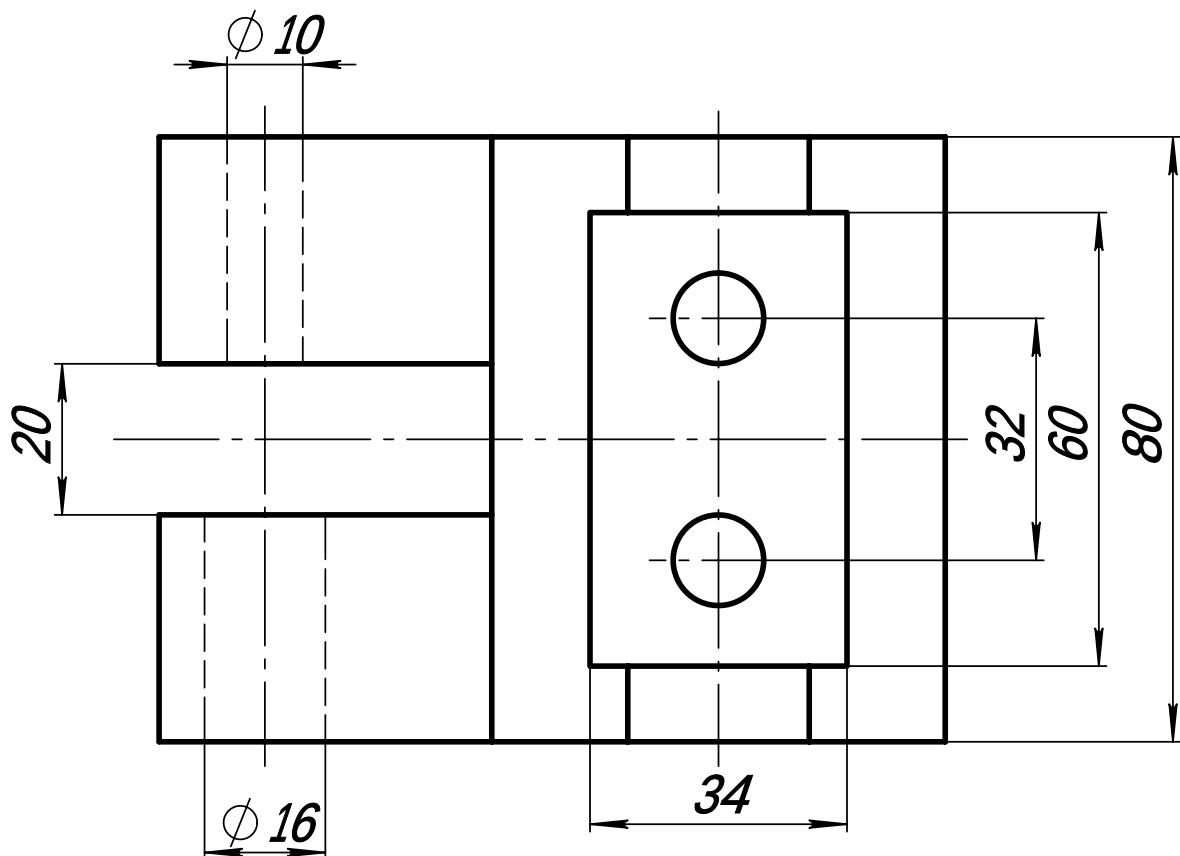
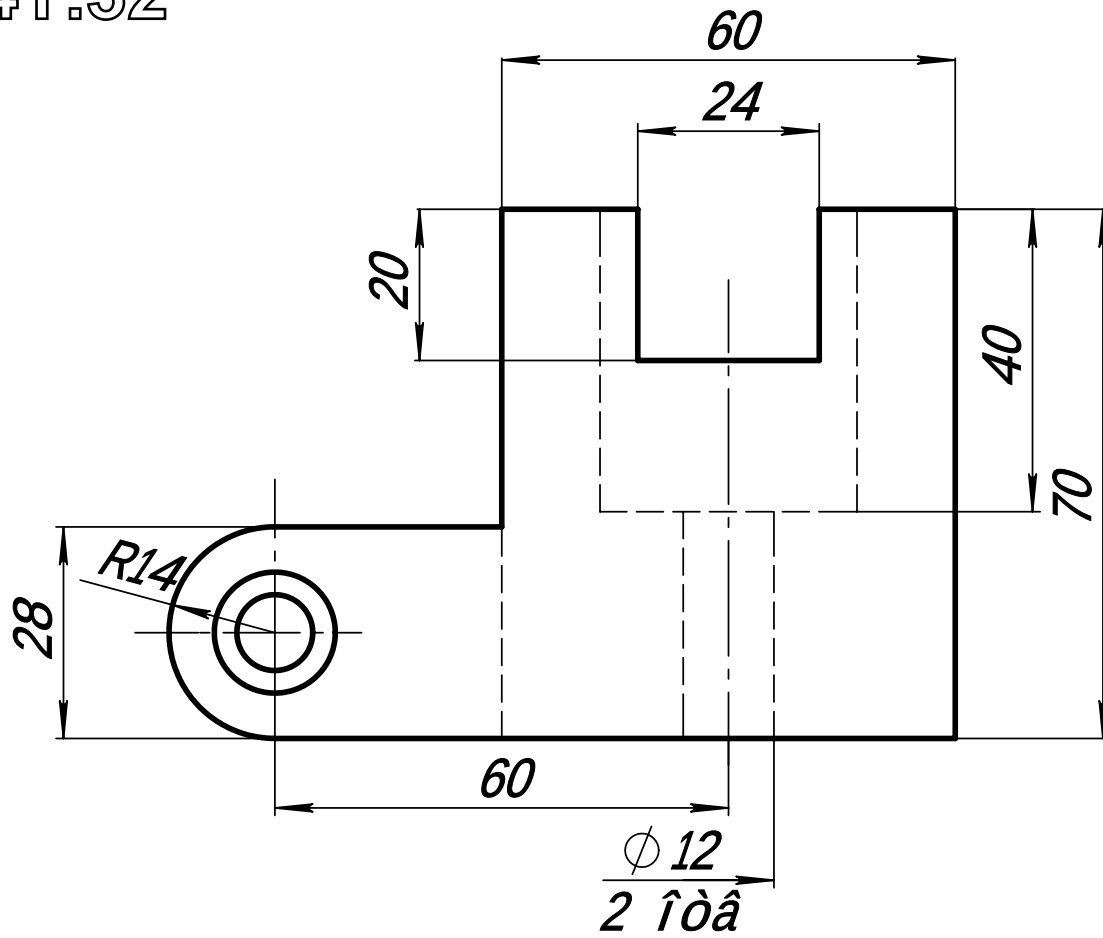
Top View Dimensions:

- Overall width: 120
- Left hole diameter: $\phi 8$
- Right hole diameter: $\phi 20$
- Distance between hole centers: 4



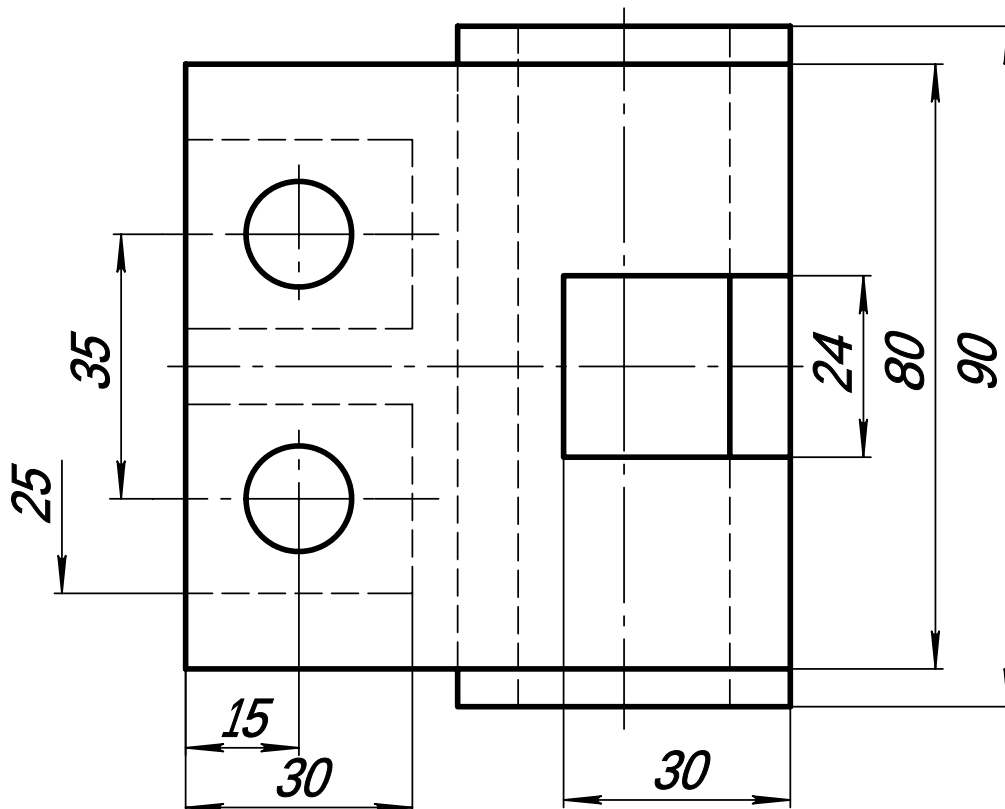
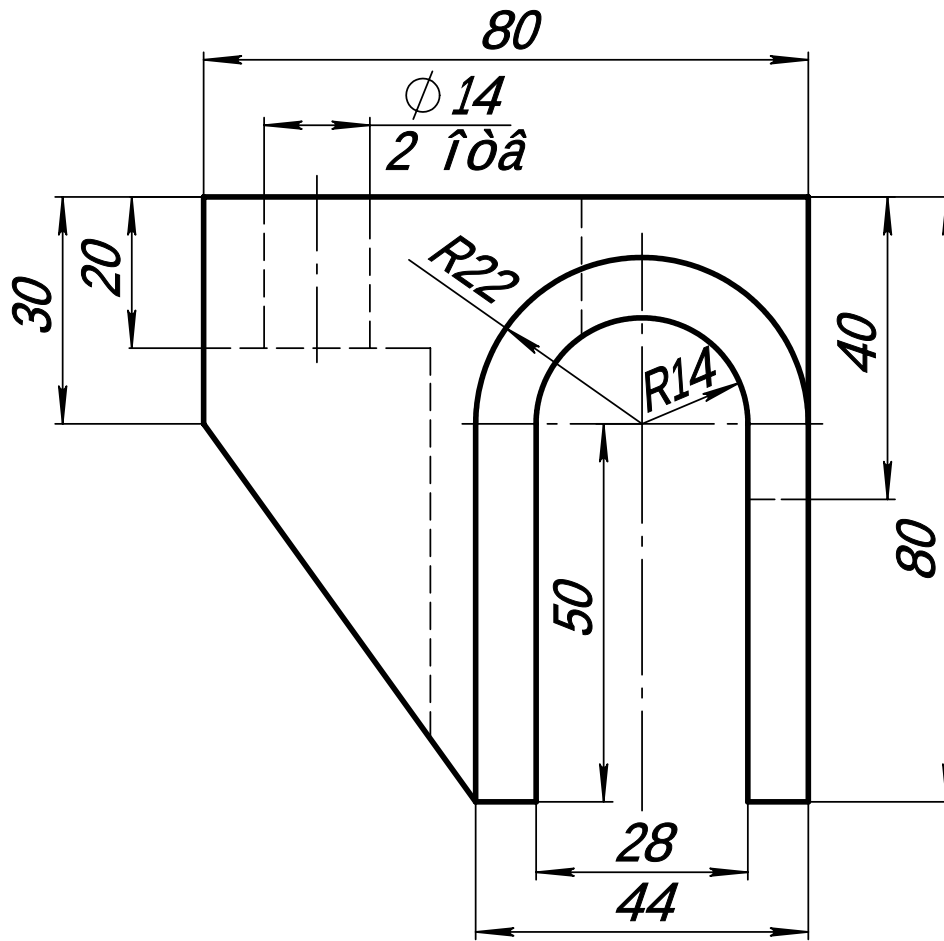


4T.32



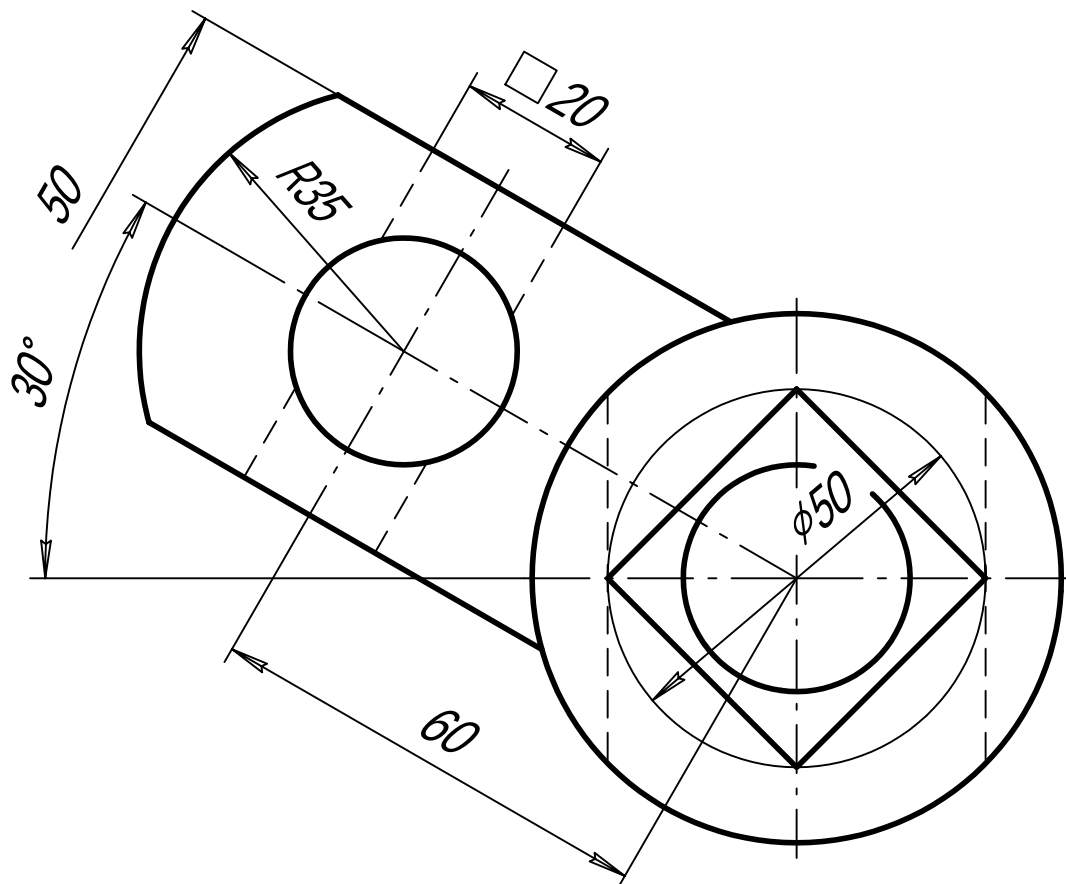
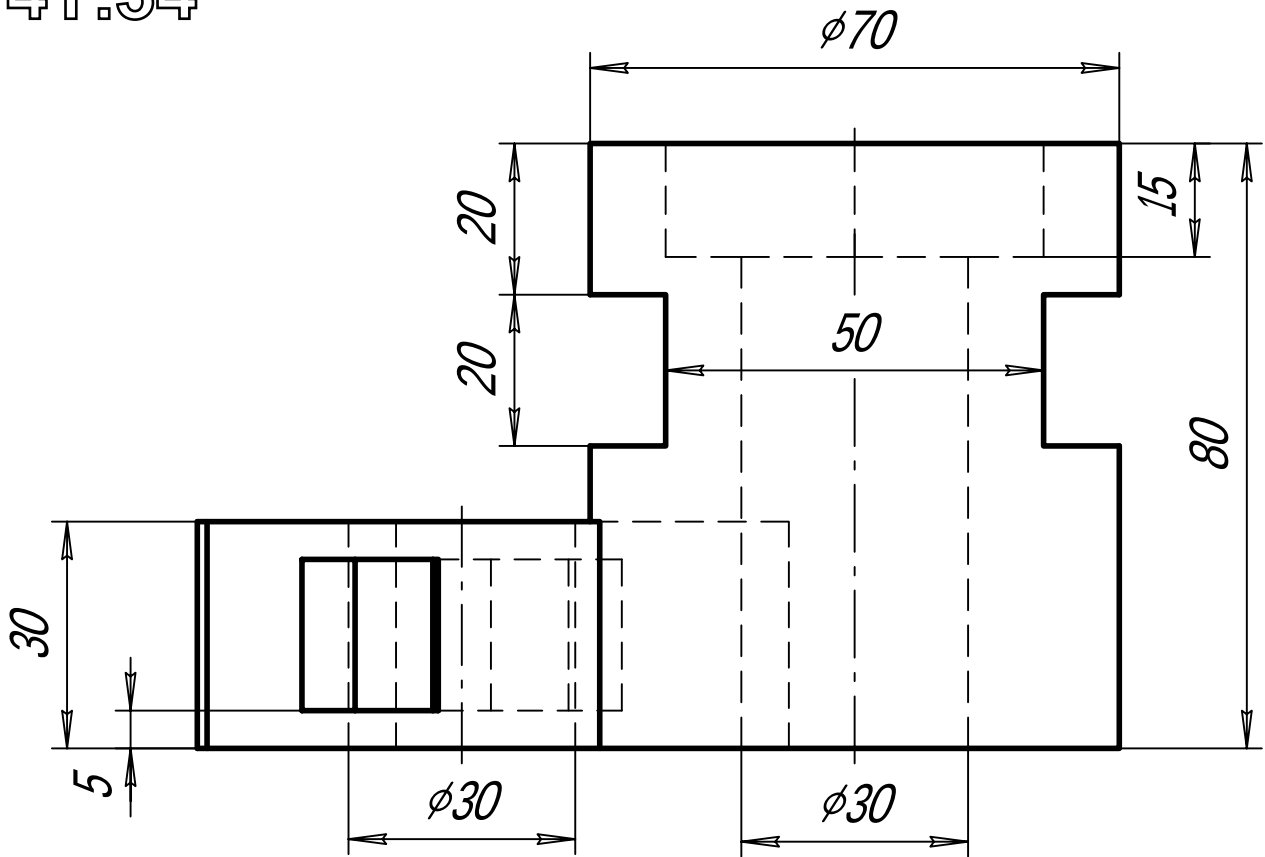


4T.33



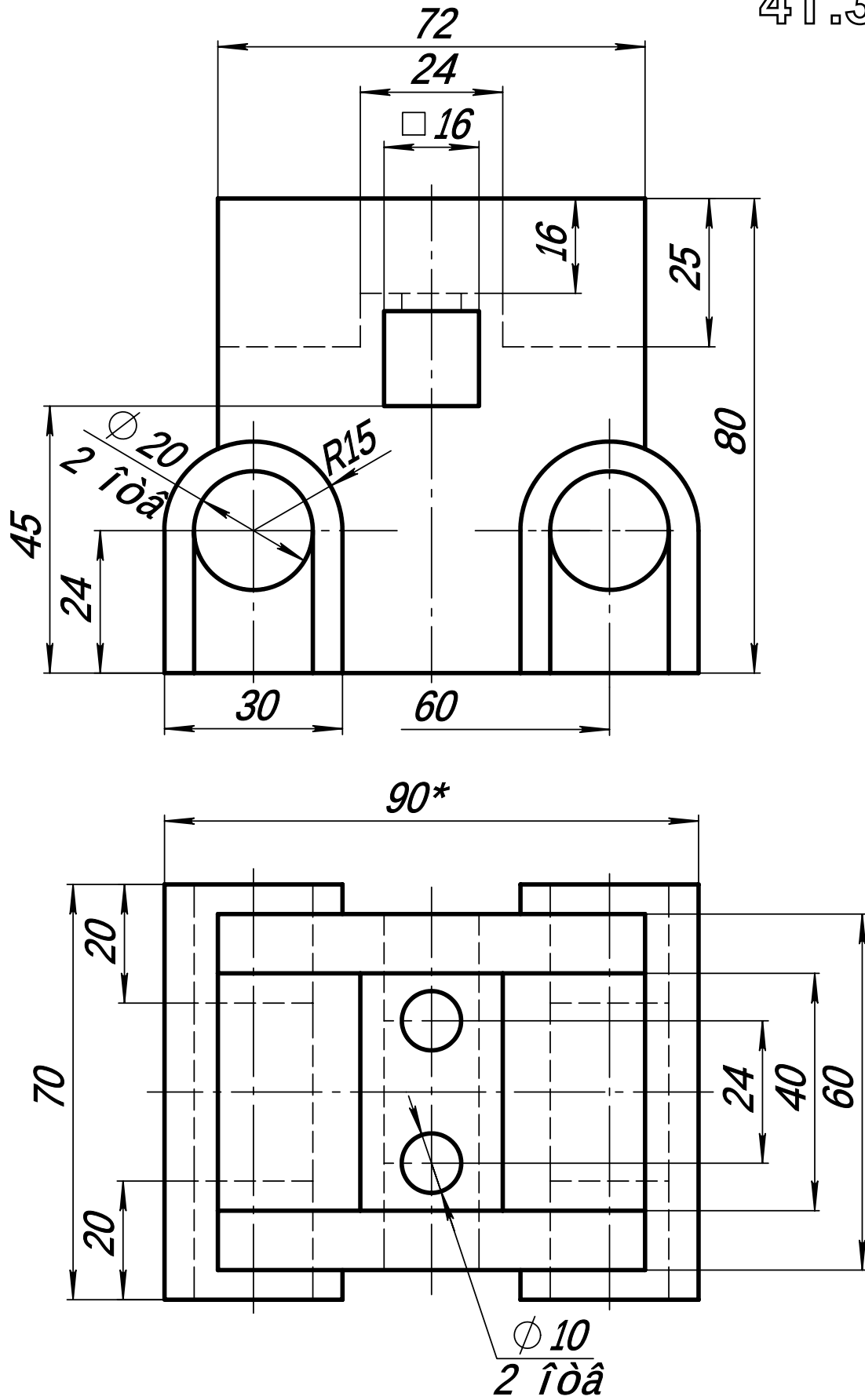


4T.34



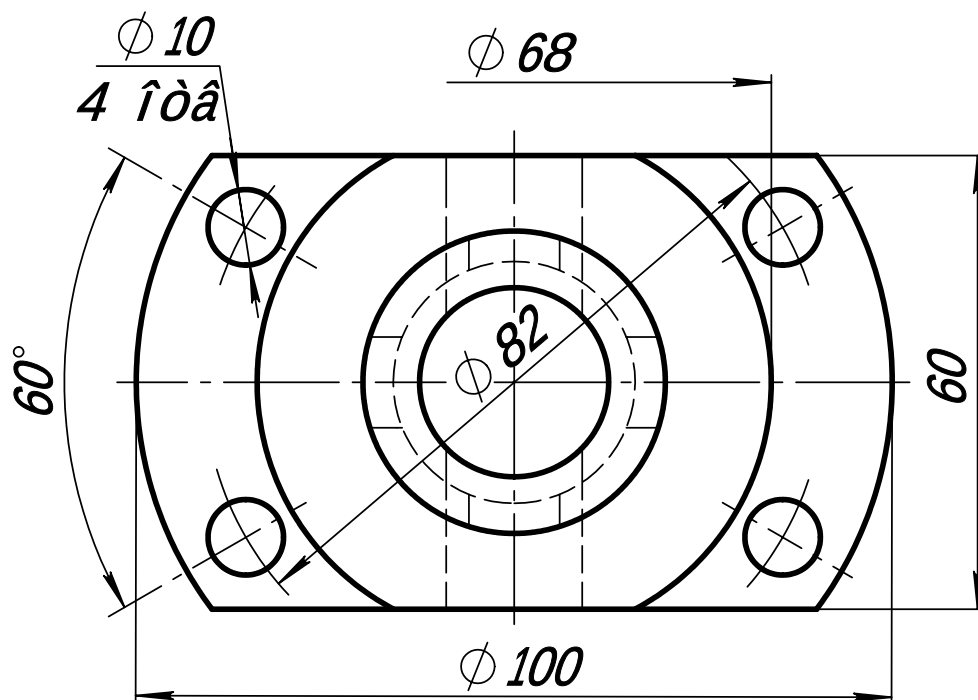
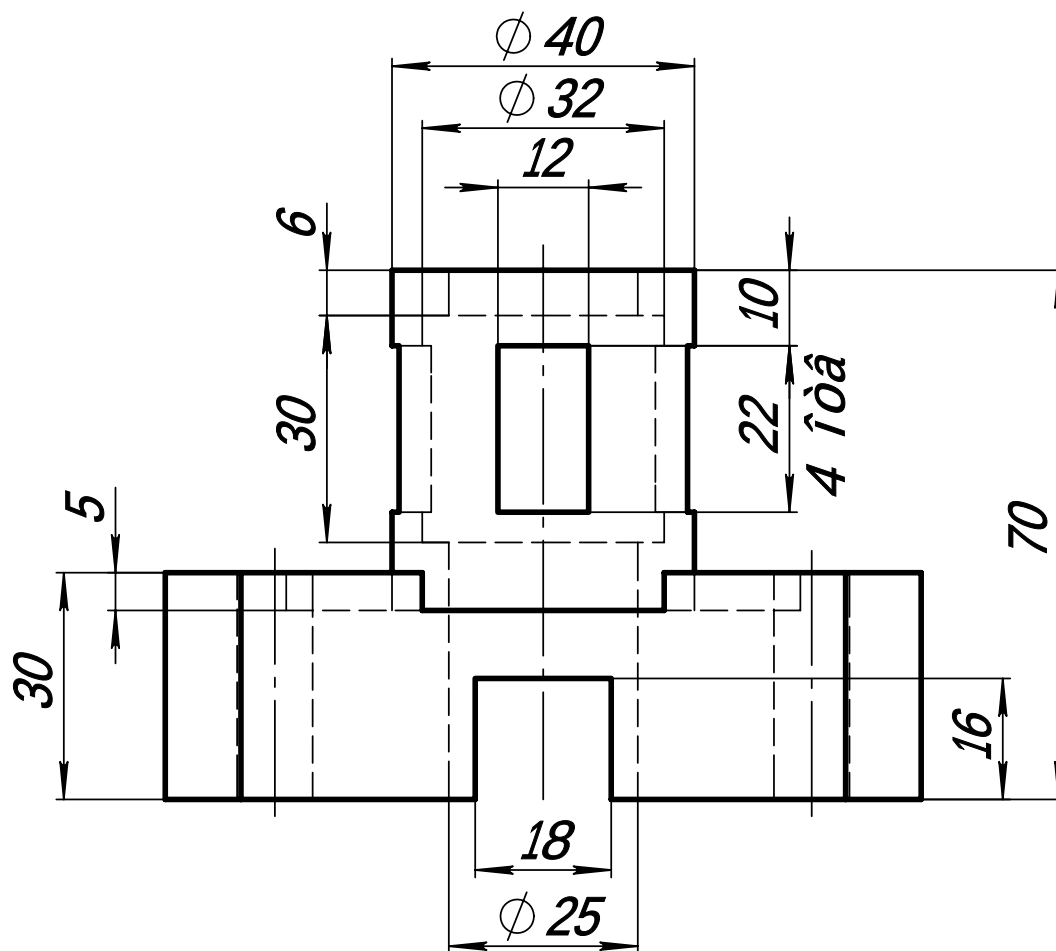


4T.35





4T.36



Technical drawing of a mechanical part showing front and top views with dimensions.

Front View Dimensions:

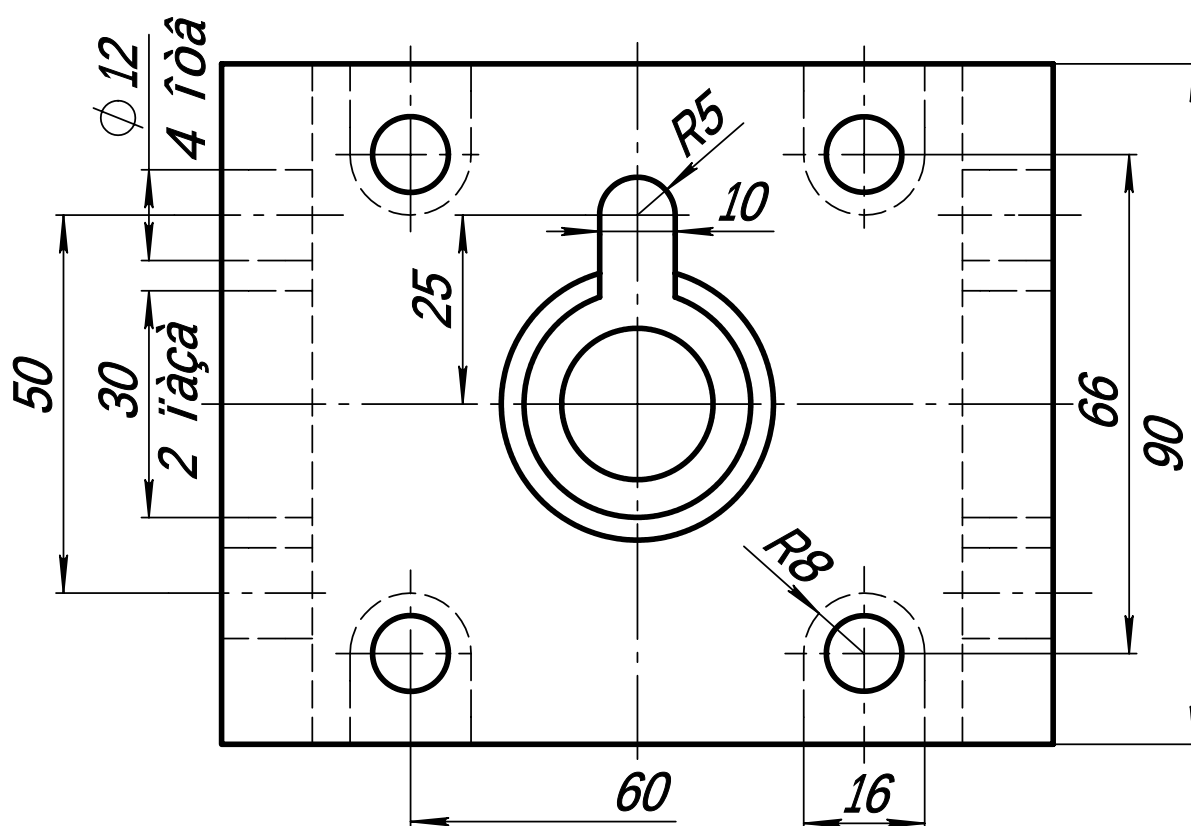
- Overall width: 110
- Overall height: 46
- Top flange thickness: 6
- Top flange outer diameter: $\phi 36$
- Top flange inner diameter: $\phi 30$
- Top flange hole diameter: $\phi 10$
- Top flange hole spacing: 4 (center-to-center)
- Top flange hole offset from center: 4 (each side)
- Top flange hole diameter: $\phi 10$
- Top flange hole spacing: 4 (center-to-center)
- Top flange hole offset from center: 4 (each side)
- Top flange hole diameter: $\phi 10$
- Top flange hole spacing: 4 (center-to-center)
- Top flange hole offset from center: 4 (each side)

Top View Dimensions:

- Overall width: 110
- Overall height: 46
- Internal width: 86
- Internal height: 28
- Internal hole diameter: $\phi 20$
- Internal hole offset from center: 5 (each side)
- Internal hole diameter: $\phi 20$
- Internal hole offset from center: 5 (each side)
- Internal hole diameter: $\phi 20$
- Internal hole offset from center: 5 (each side)

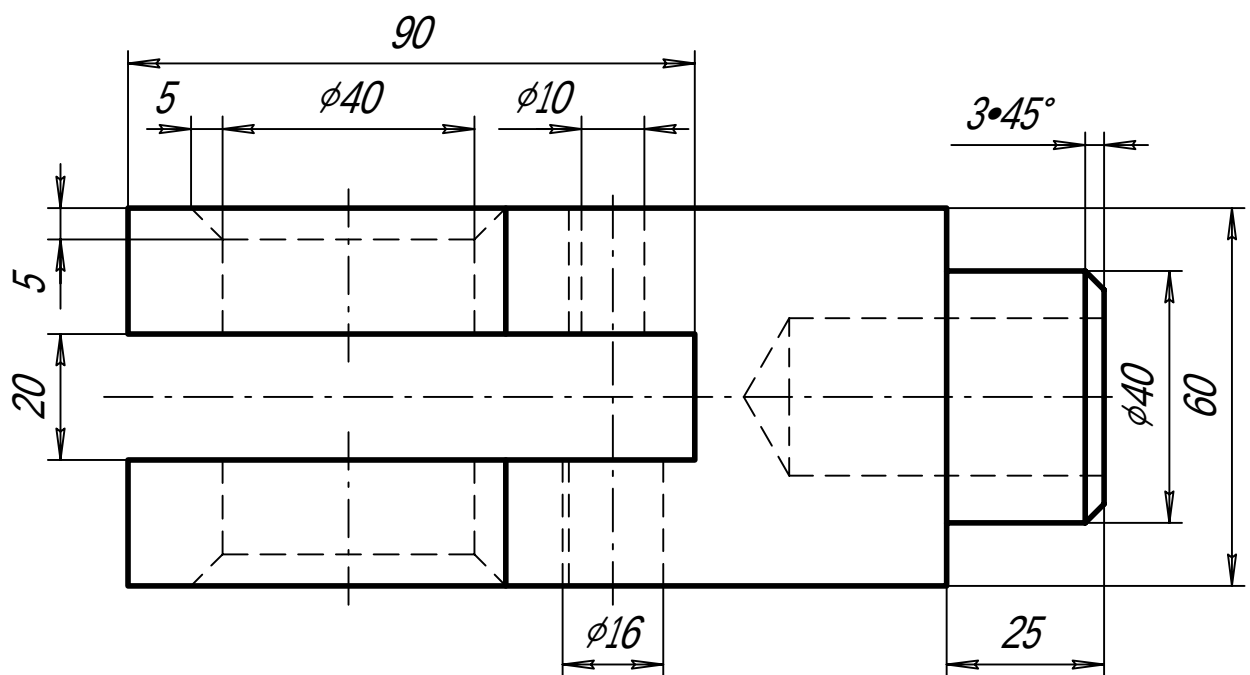
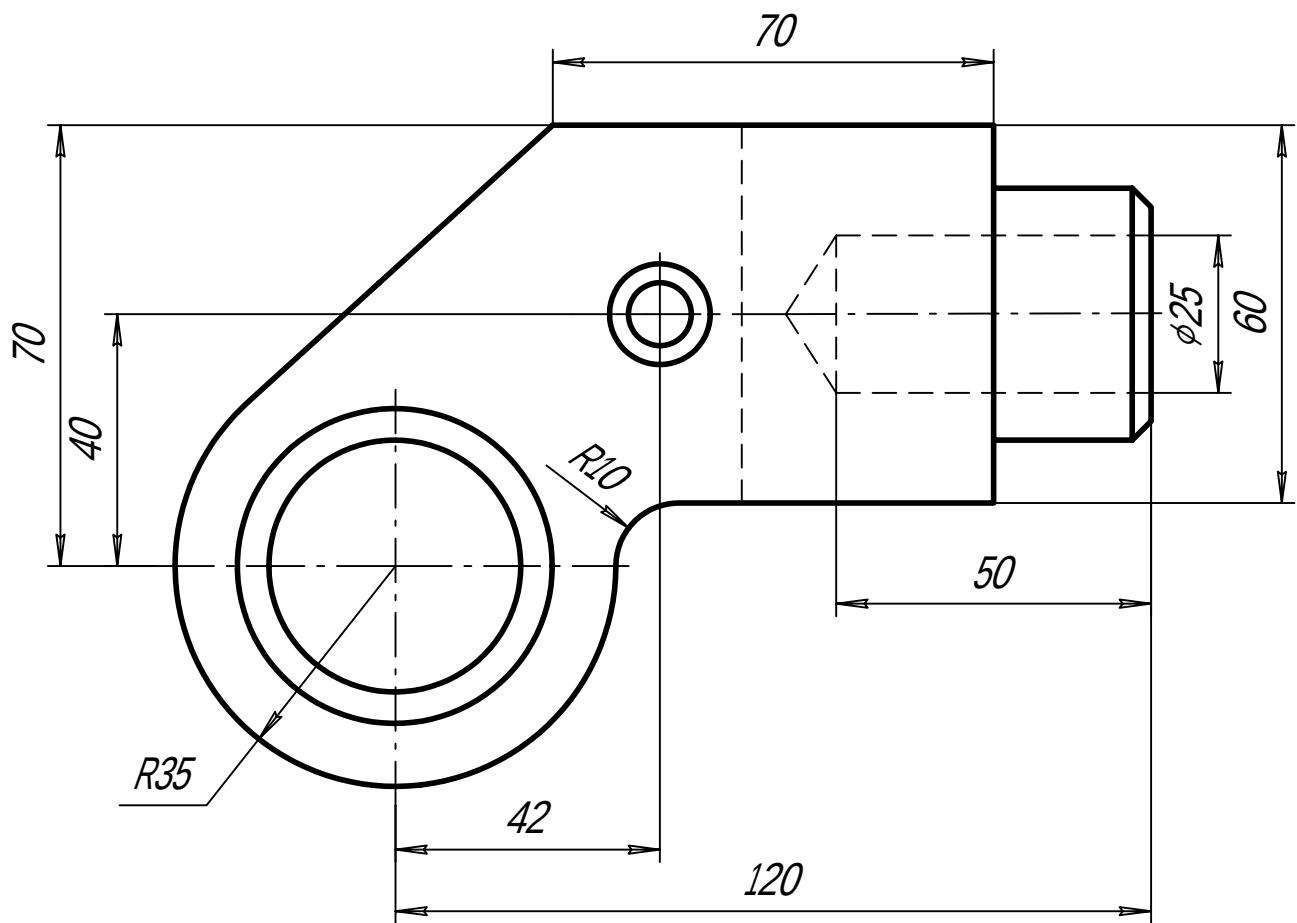
Other Dimensions:

- Top flange thickness: 10
- Top flange hole diameter: $\phi 10$
- Top flange hole spacing: 4 (center-to-center)
- Top flange hole offset from center: 4 (each side)
- Top flange hole diameter: $\phi 10$
- Top flange hole spacing: 4 (center-to-center)
- Top flange hole offset from center: 4 (each side)
- Top flange hole diameter: $\phi 10$
- Top flange hole spacing: 4 (center-to-center)
- Top flange hole offset from center: 4 (each side)

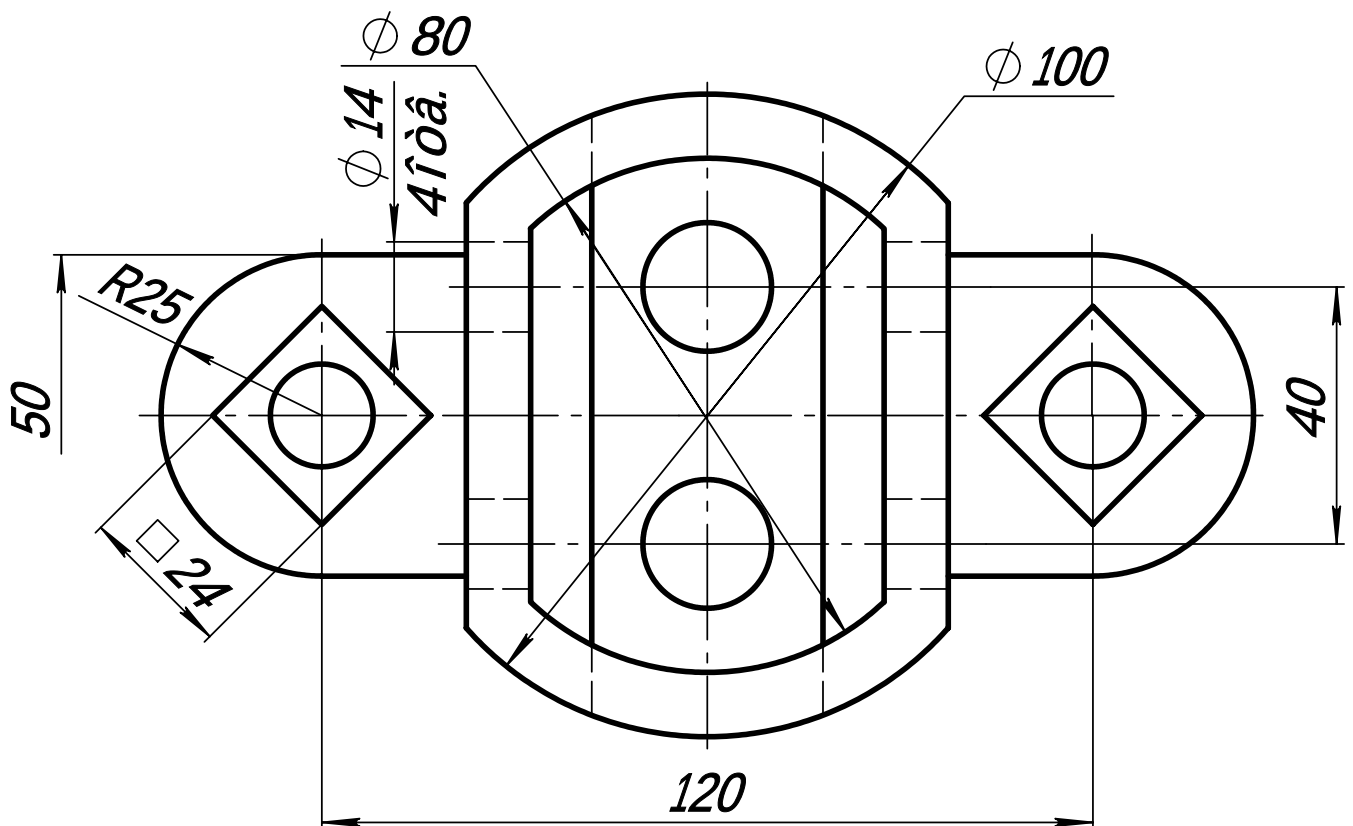




4T.38

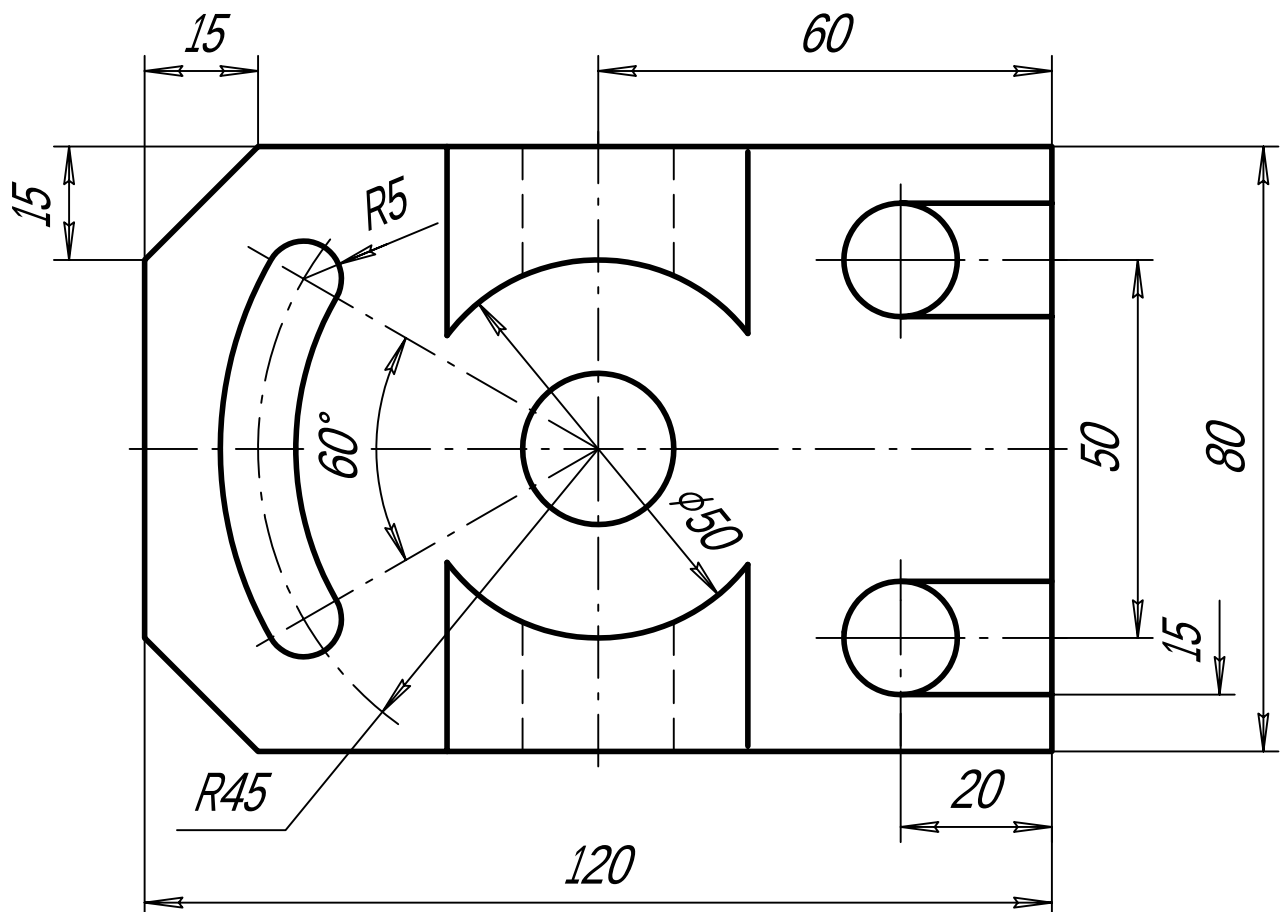


Technical drawing of a mechanical part with dimensions in mm. The part is a stepped cylinder with a central hole. Dimensions include: total length 80, total outer diameter 75, central hole diameter 36, and various step diameters and lengths (e.g., 55, 24, 20, 10, 40, 20, 10, 16, 20).



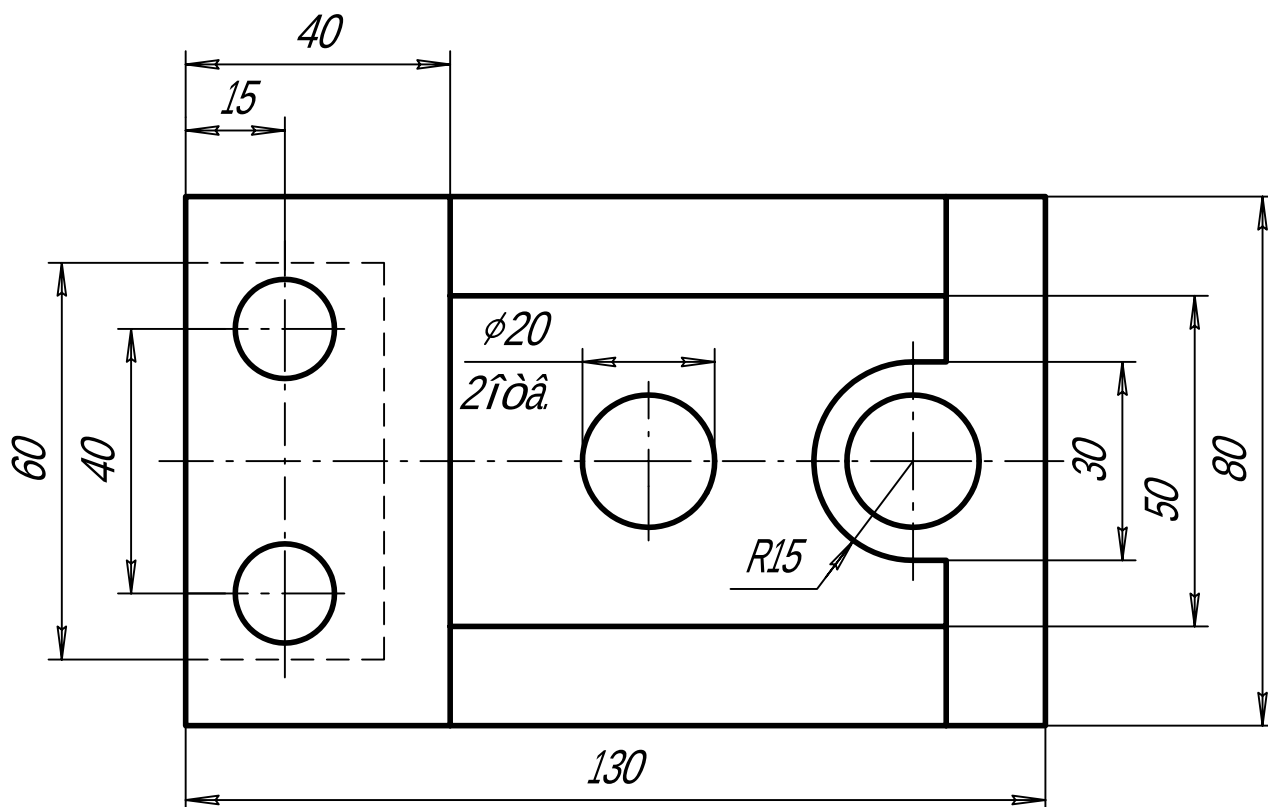
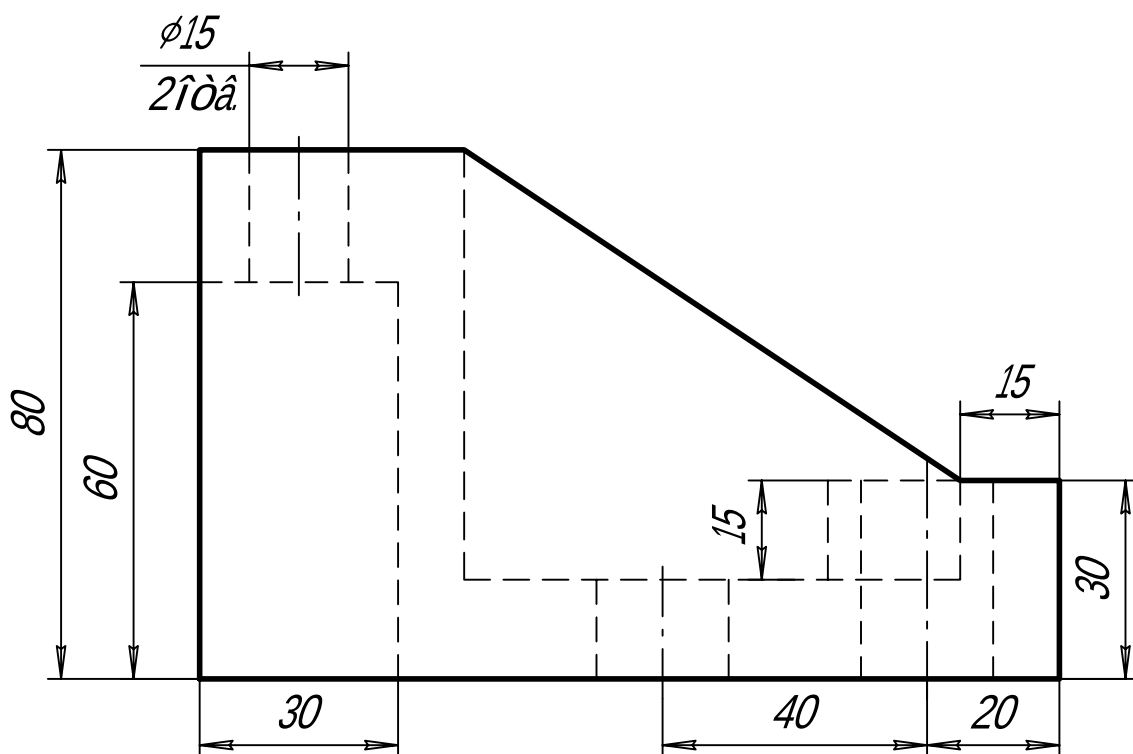
Technical drawing of a mechanical part with the following dimensions:

- Overall width: 40
- Overall height: 55
- Top section width: 20
- Top section height: 5
- Bottom section height: 10
- Left section width: $\phi 20$
- Right section width: $\phi 15$
- Right section height: 30



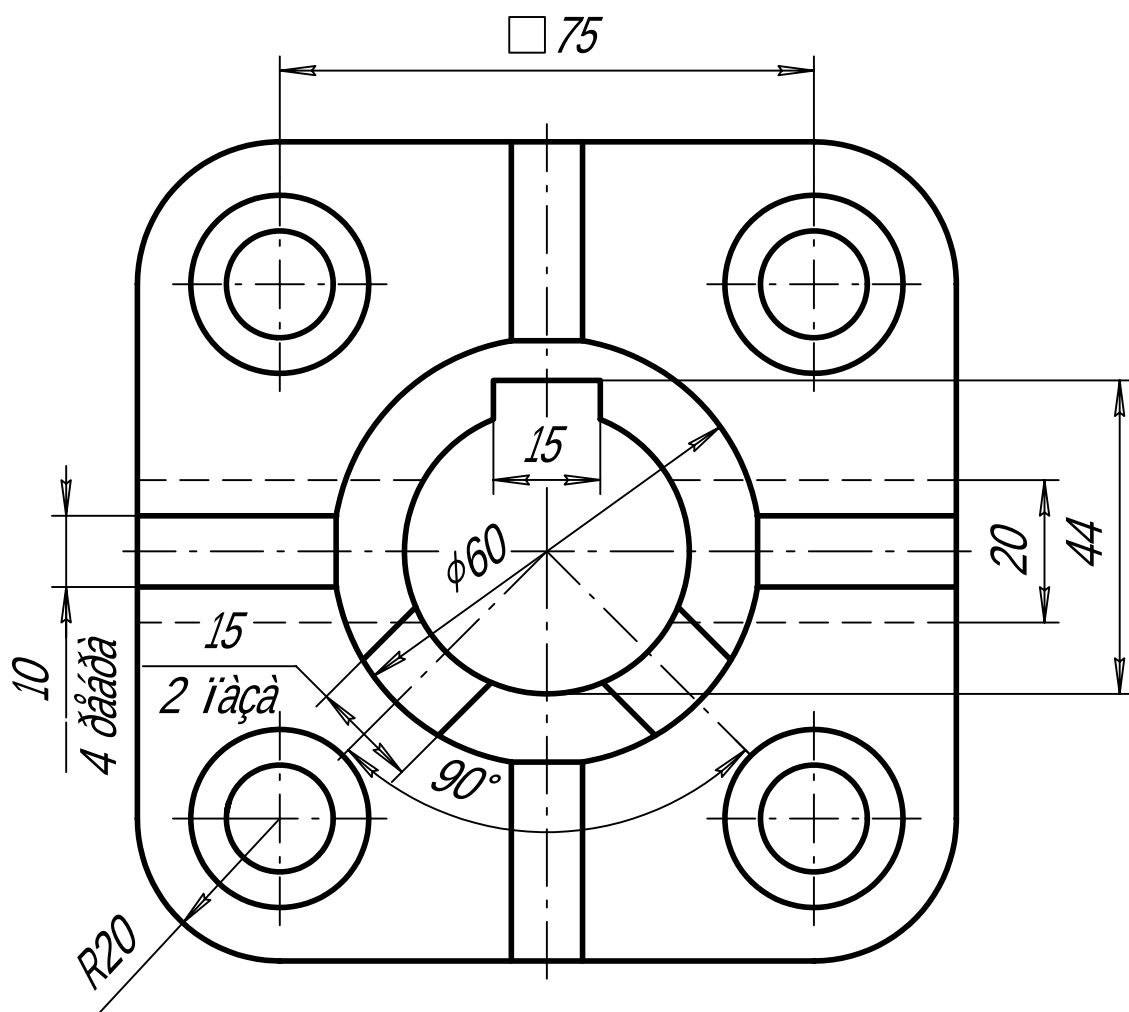
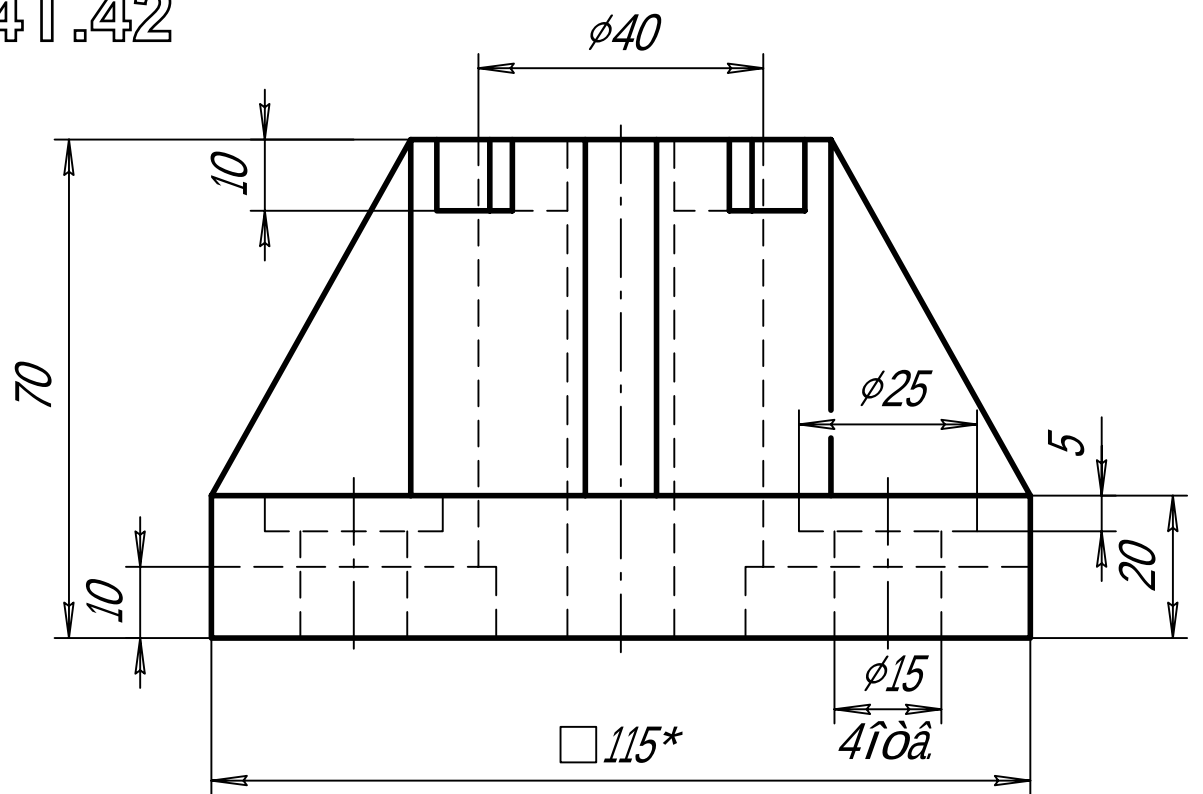


4T.41

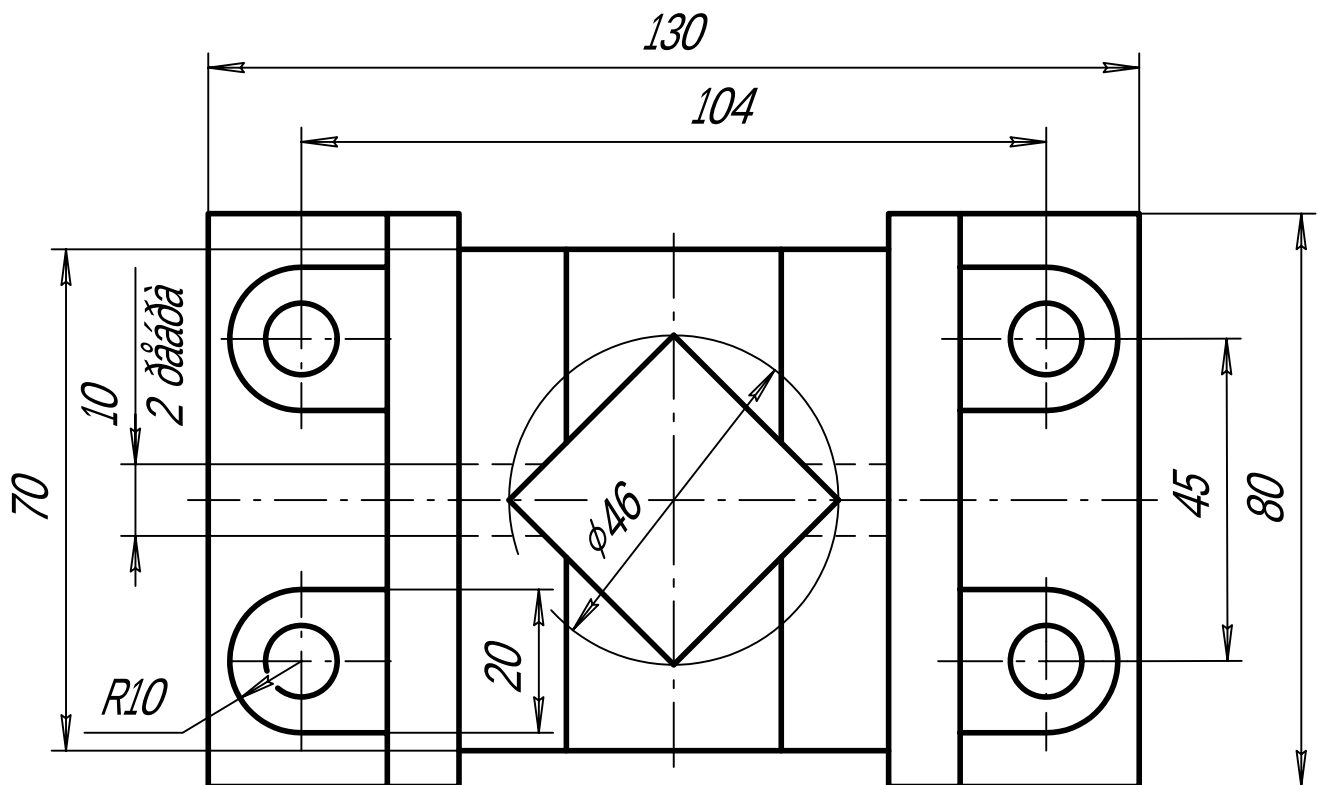




4T.42

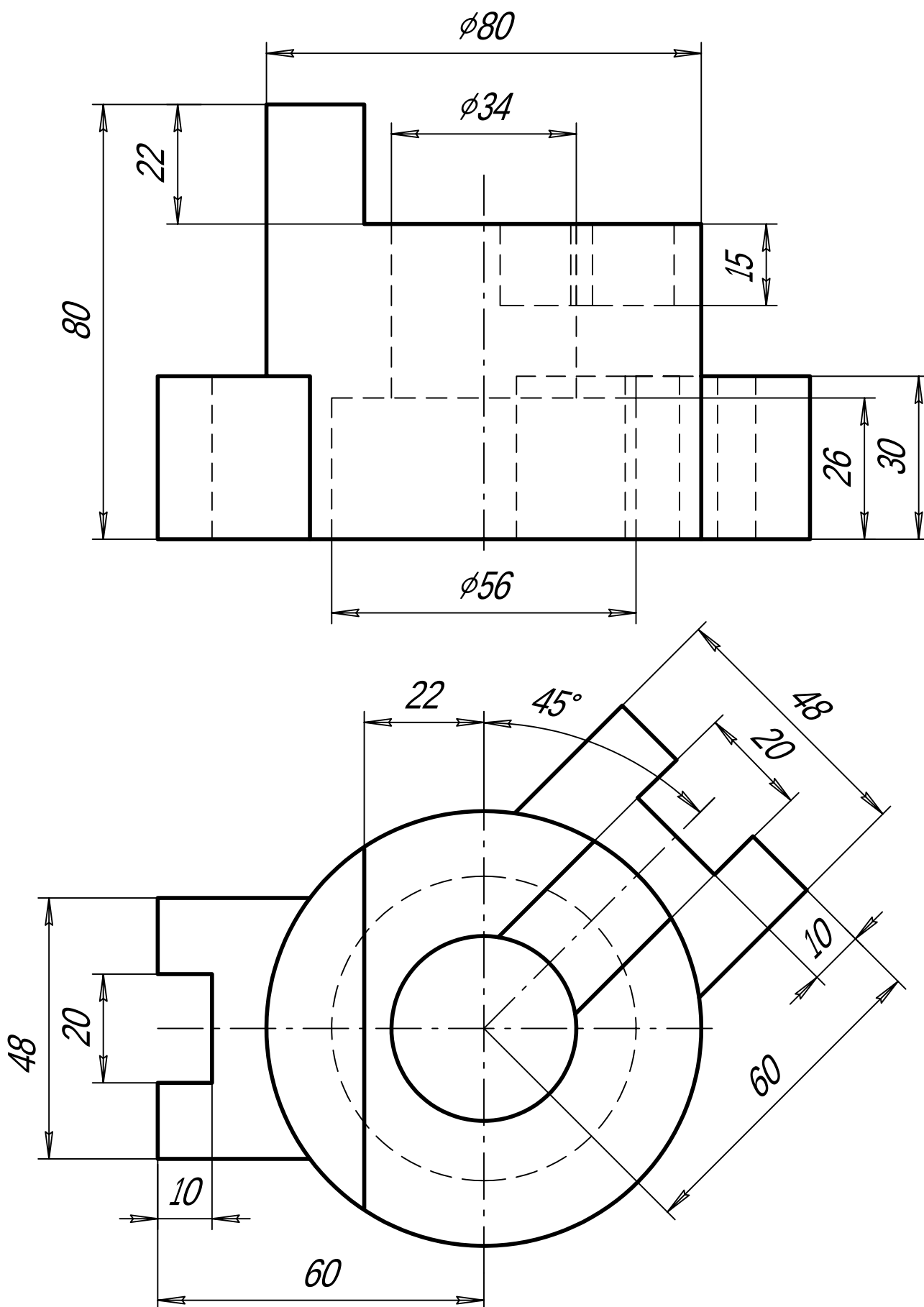


*Pạc lỗ để lắp vít



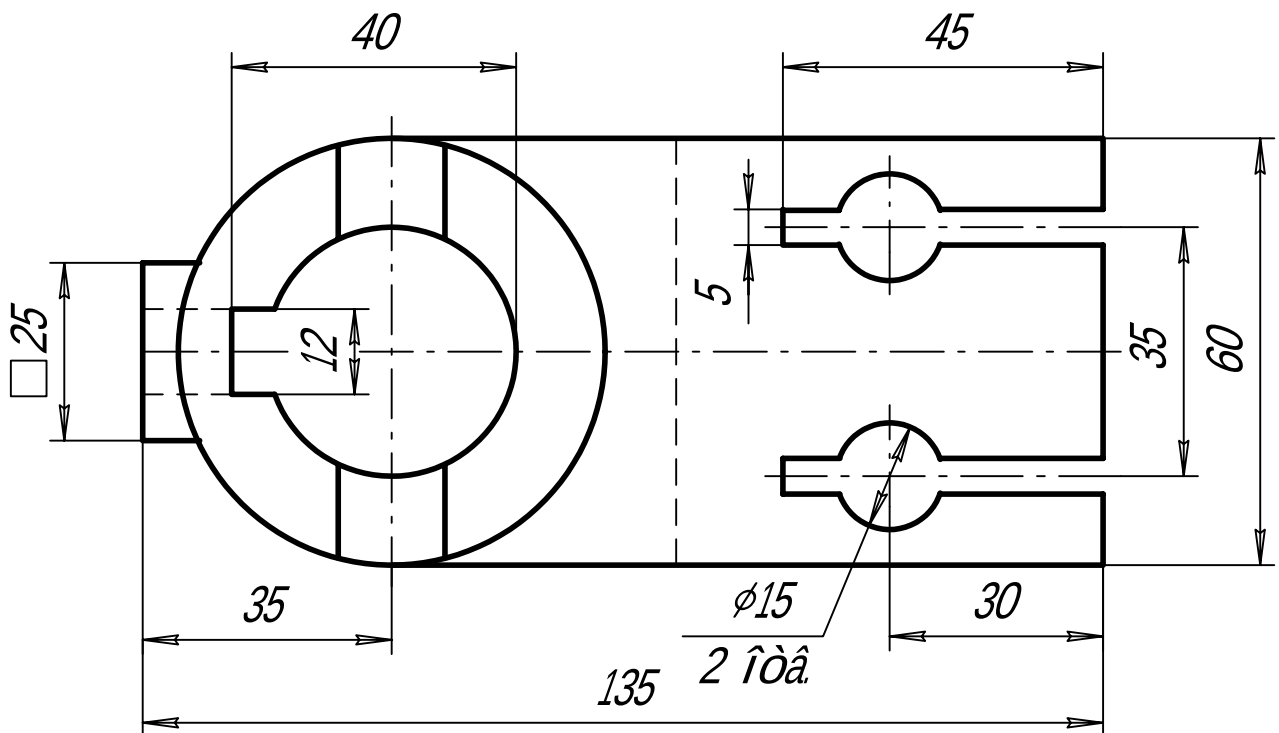


4T.44



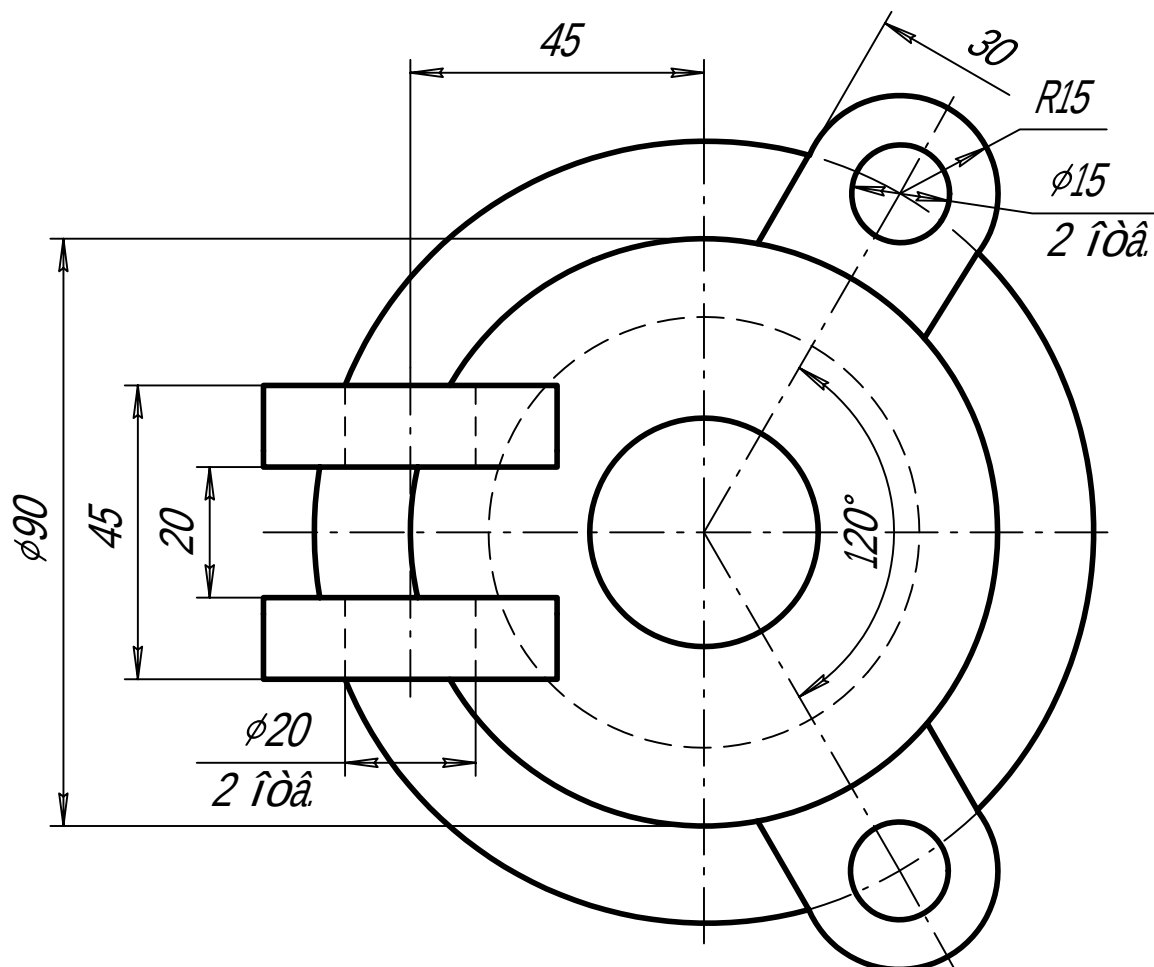
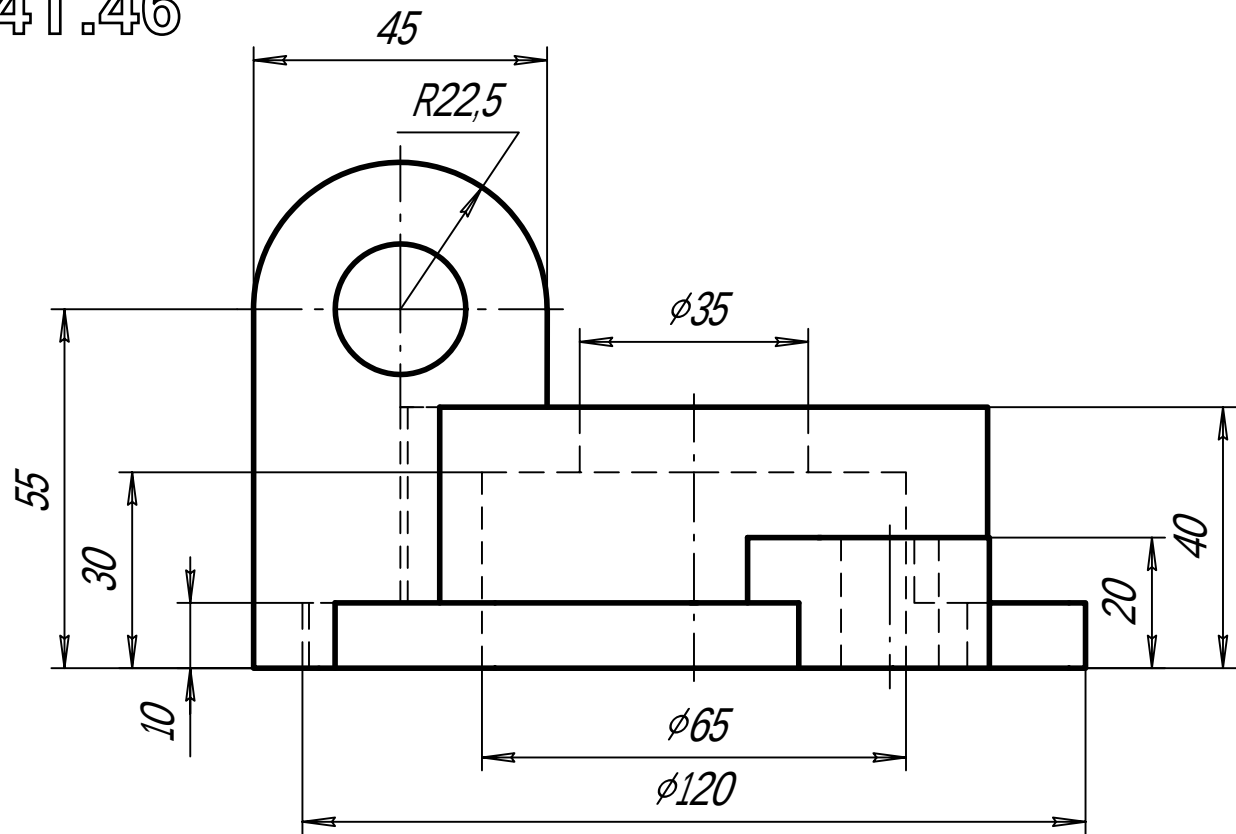


4T.45



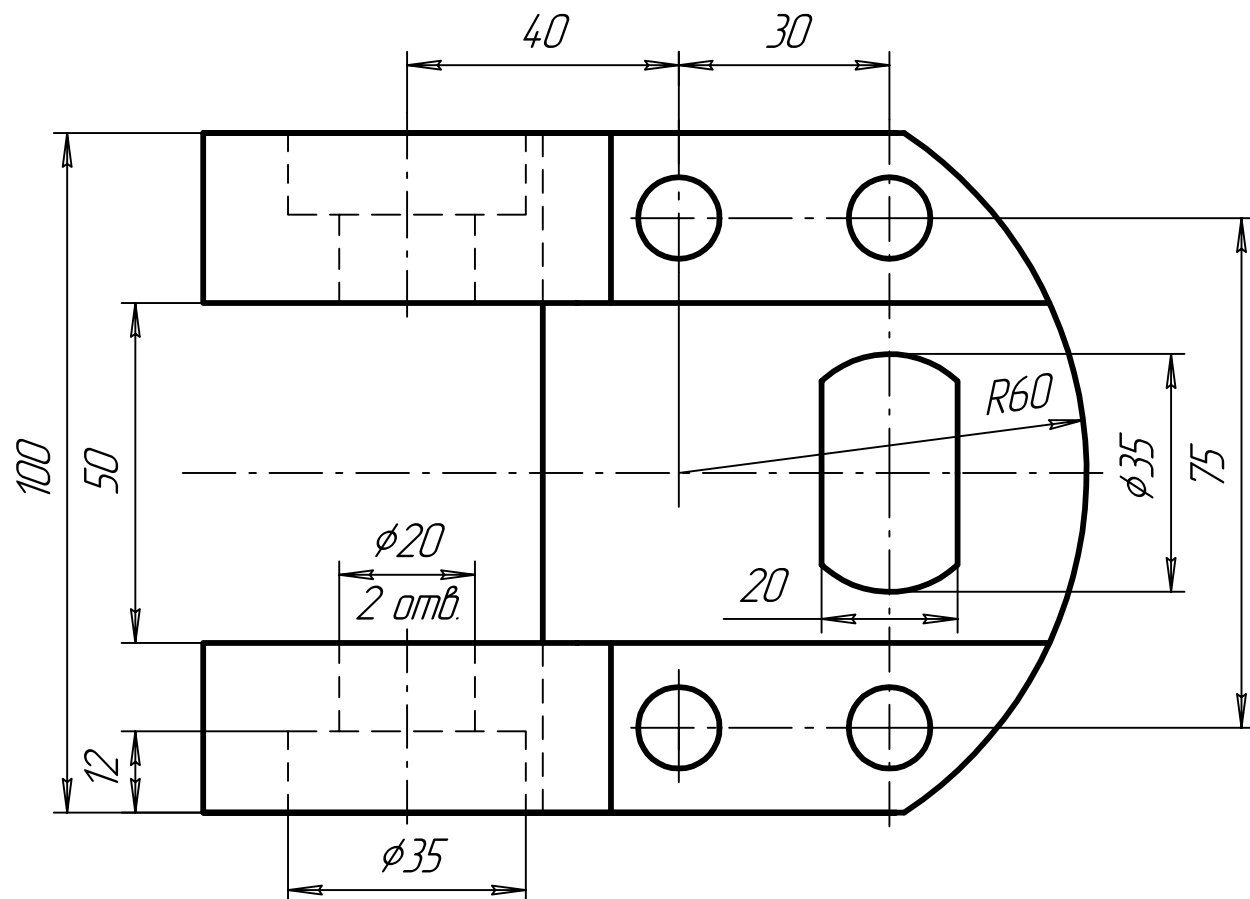
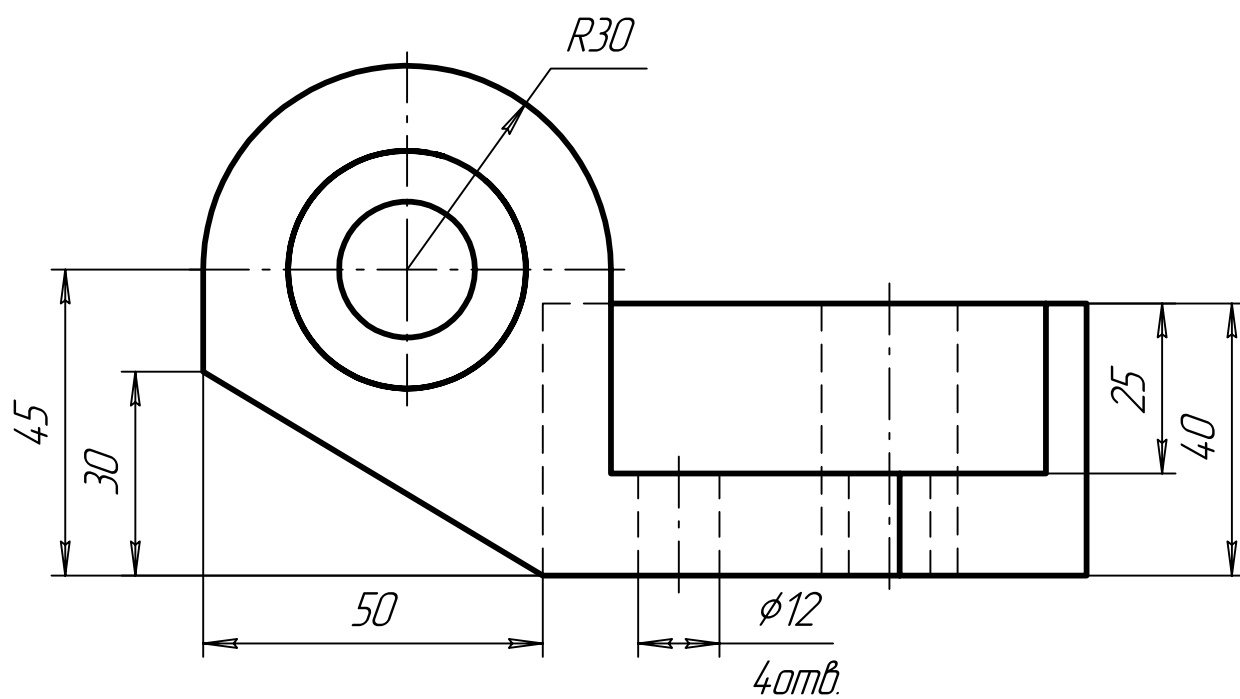


4T.46

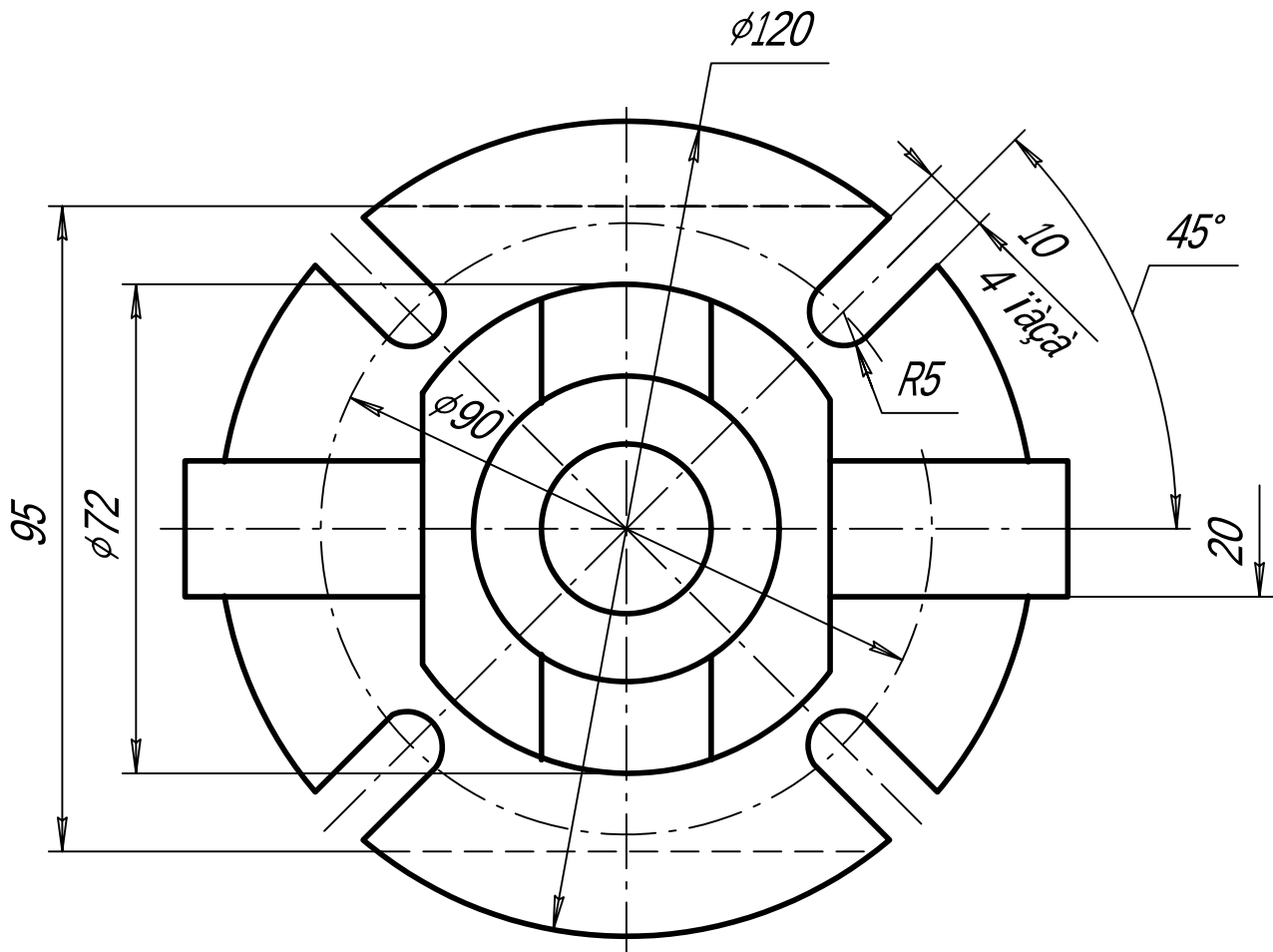
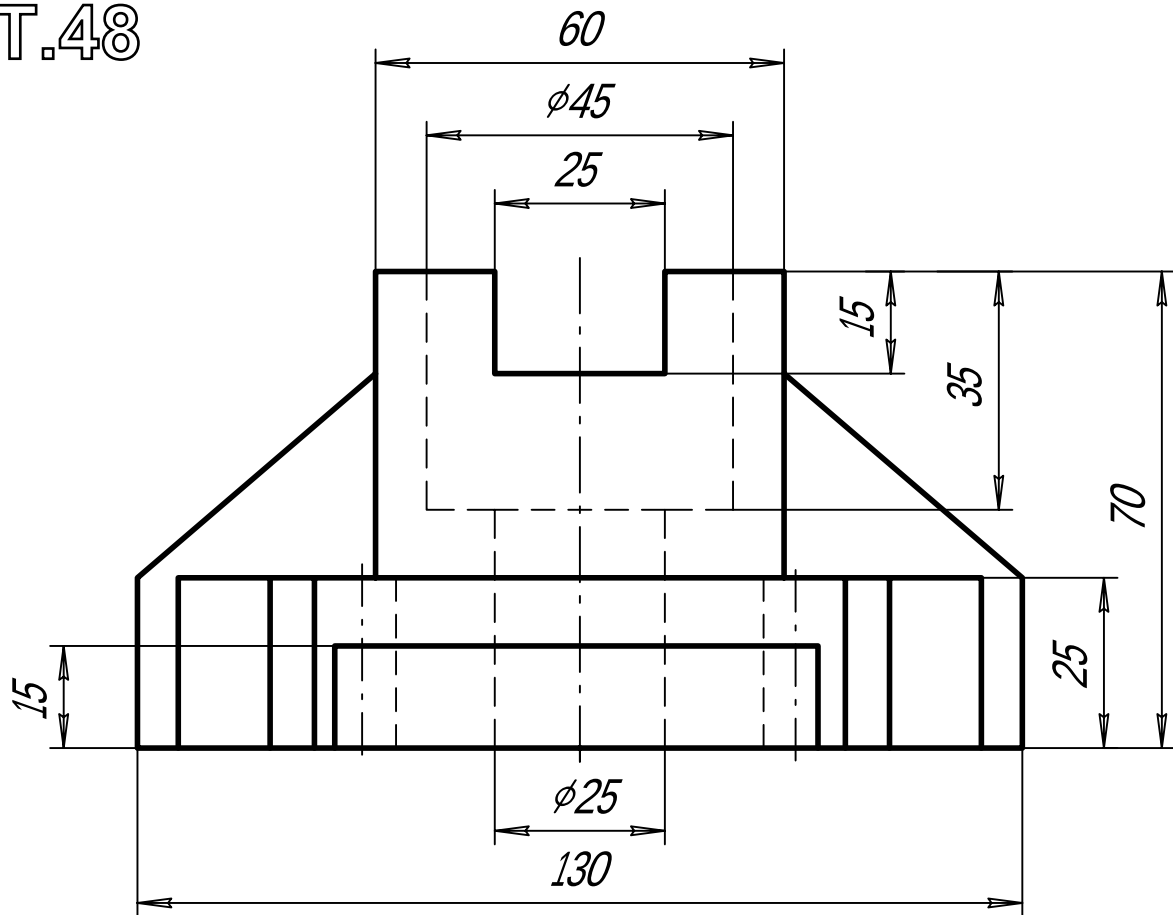




4T.47



4T.48



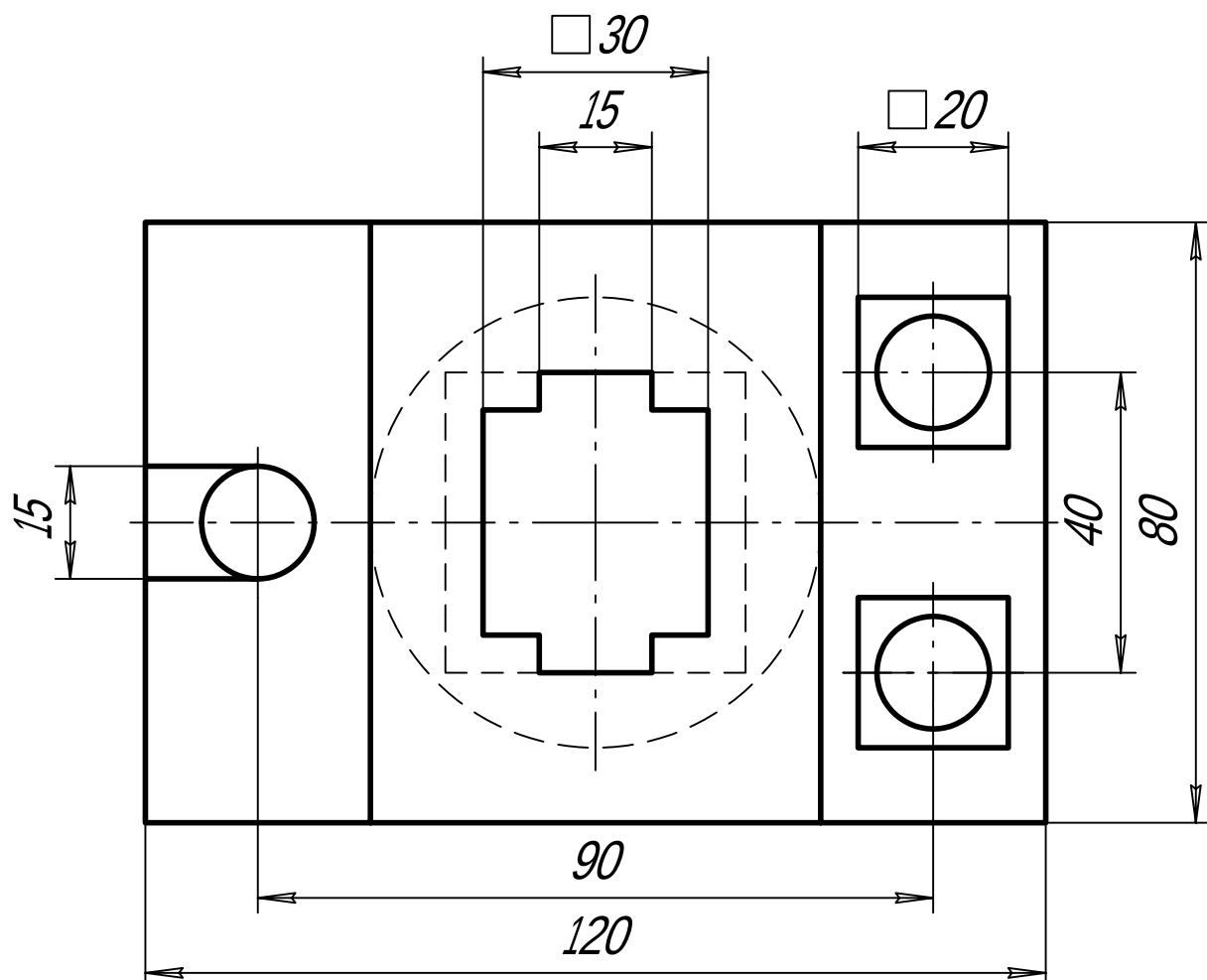
Technical drawing of a mechanical part showing front and top views with dimensions.

Front View (Top):

- Overall width: 60
- Overall height: 50
- Top section width: 40
- Top section height: 15
- Bottom section height: 15
- Internal features: Dashed lines indicate internal structure, including a central vertical slot and horizontal slots.

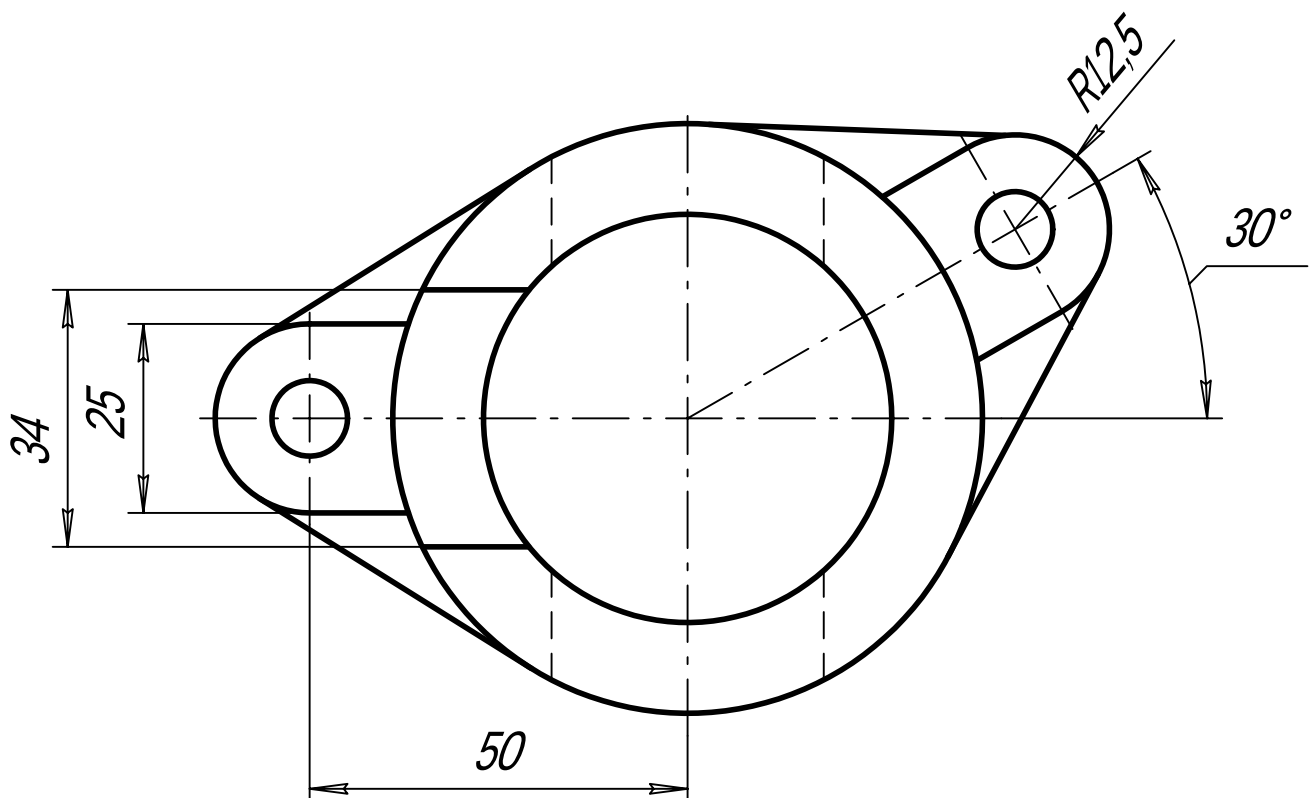
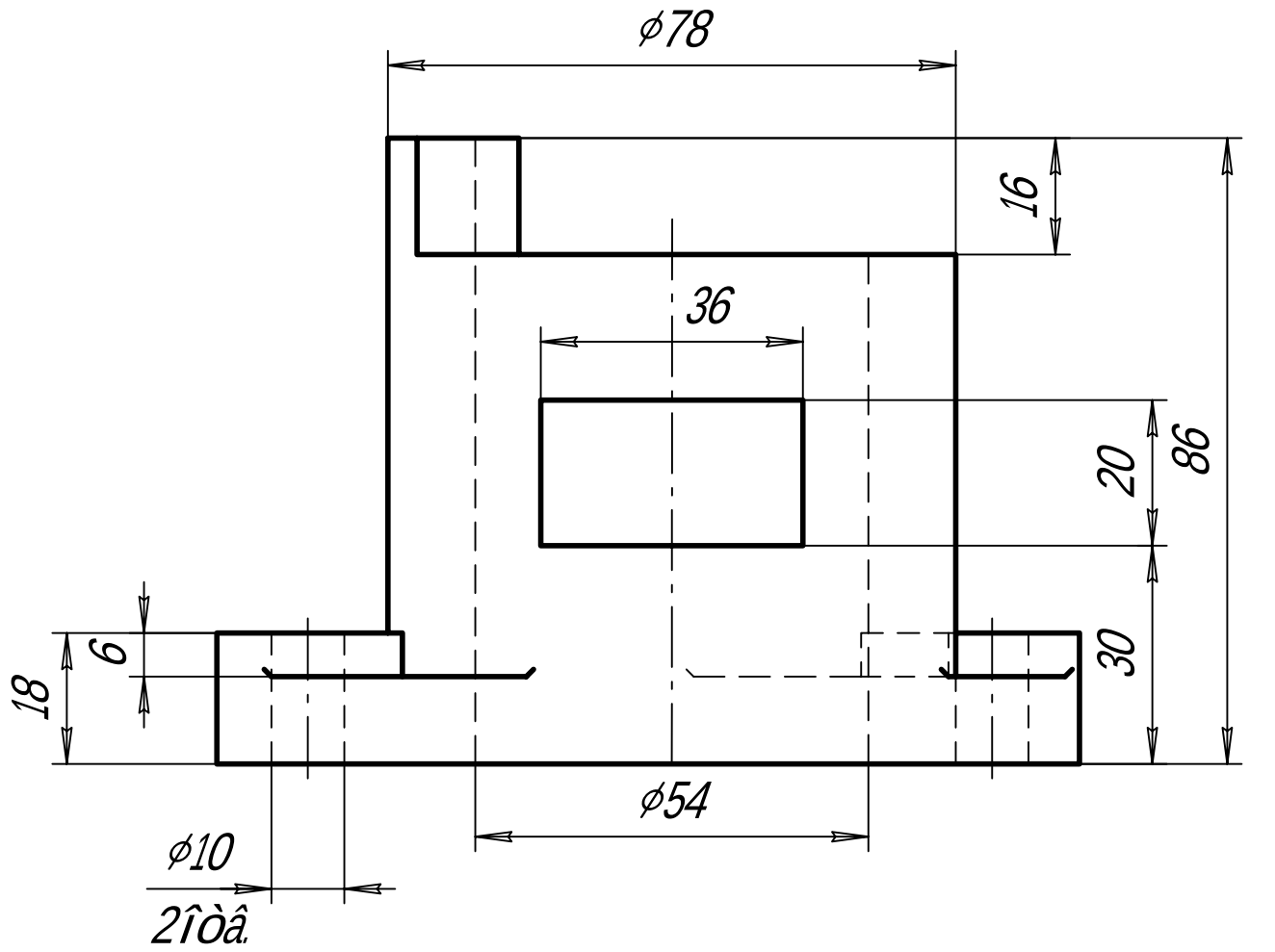
Top View (Bottom):

- Overall width: 60
- Overall depth: 30
- Central slot width: 15
- Slot depth: 25
- Internal features: Dashed lines indicate internal structure, including a central vertical slot and horizontal slots.



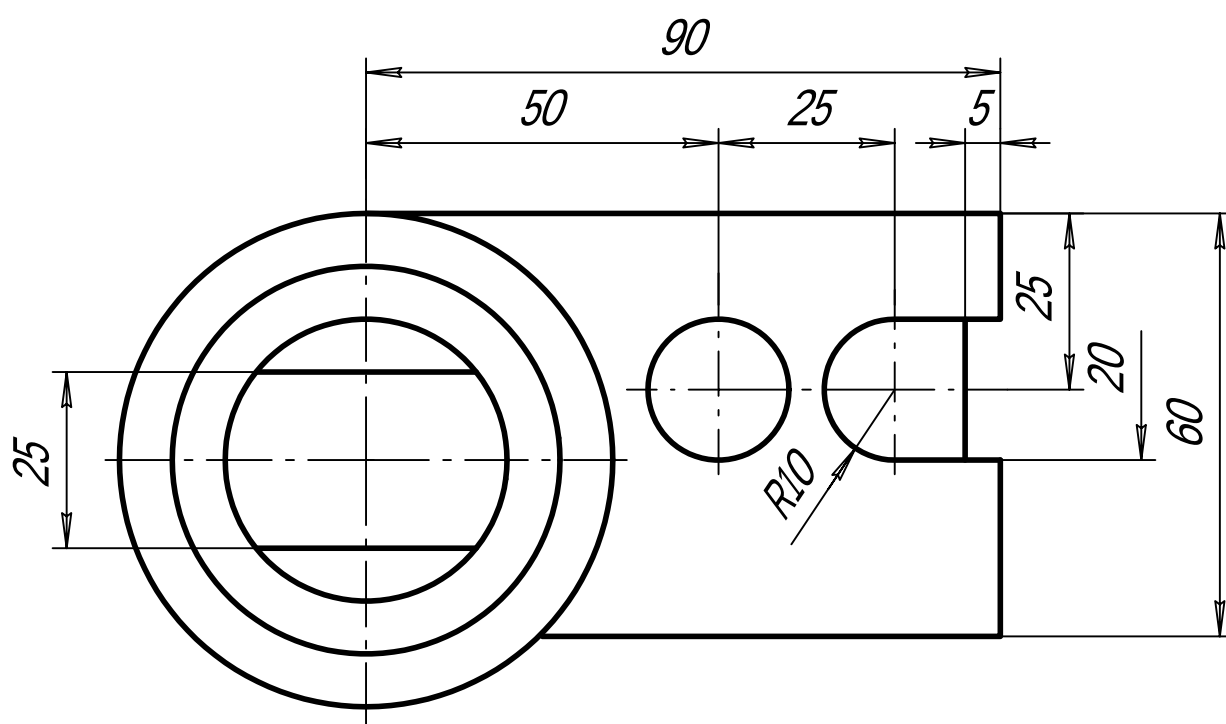
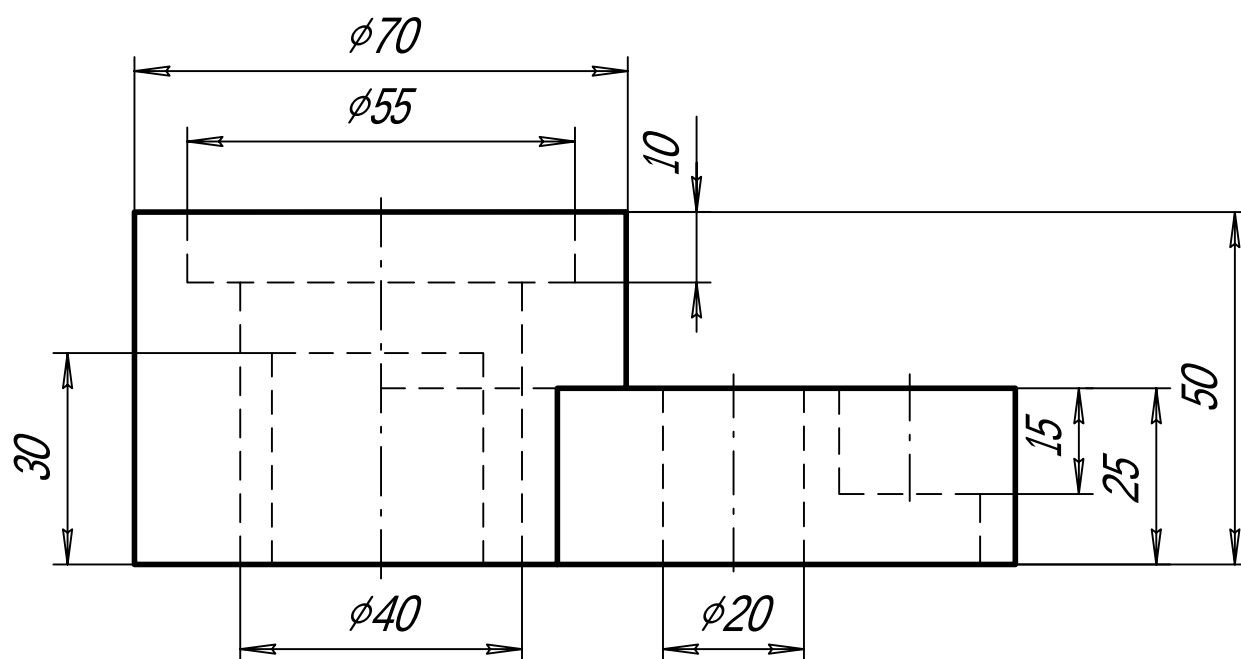


4T.50



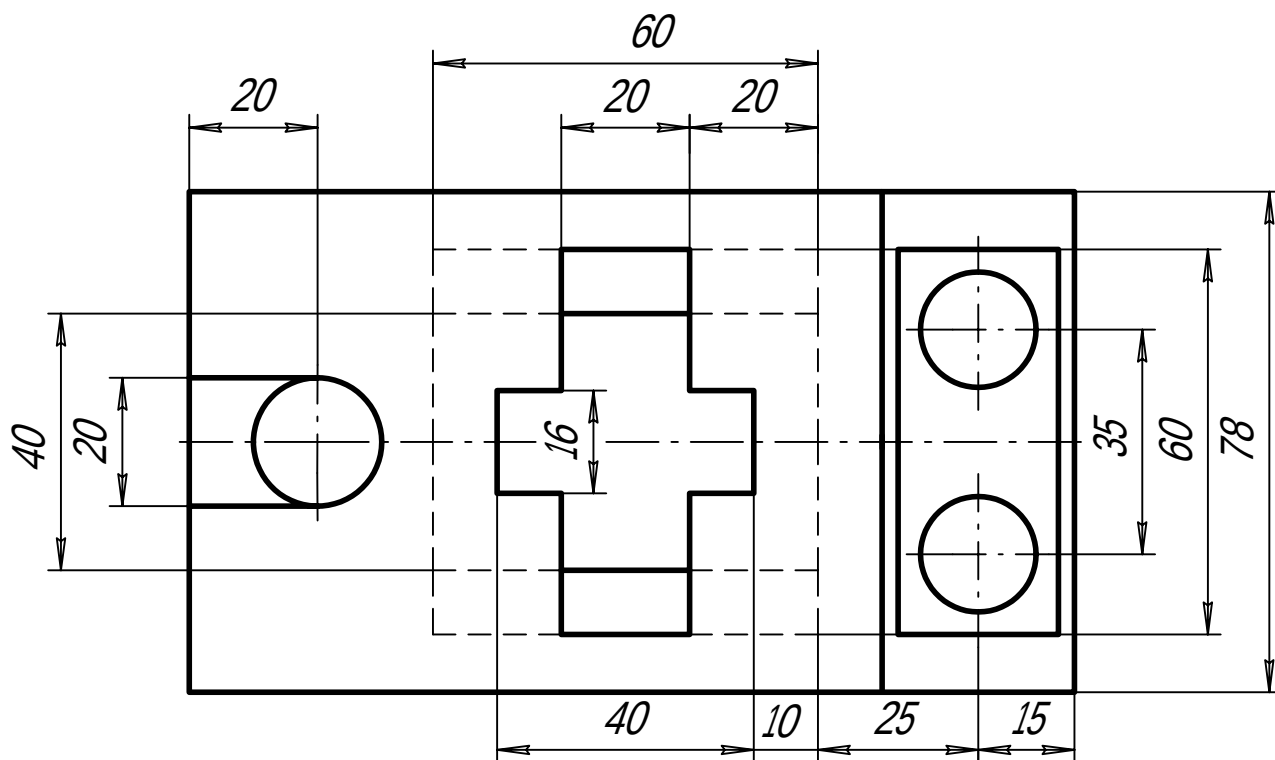
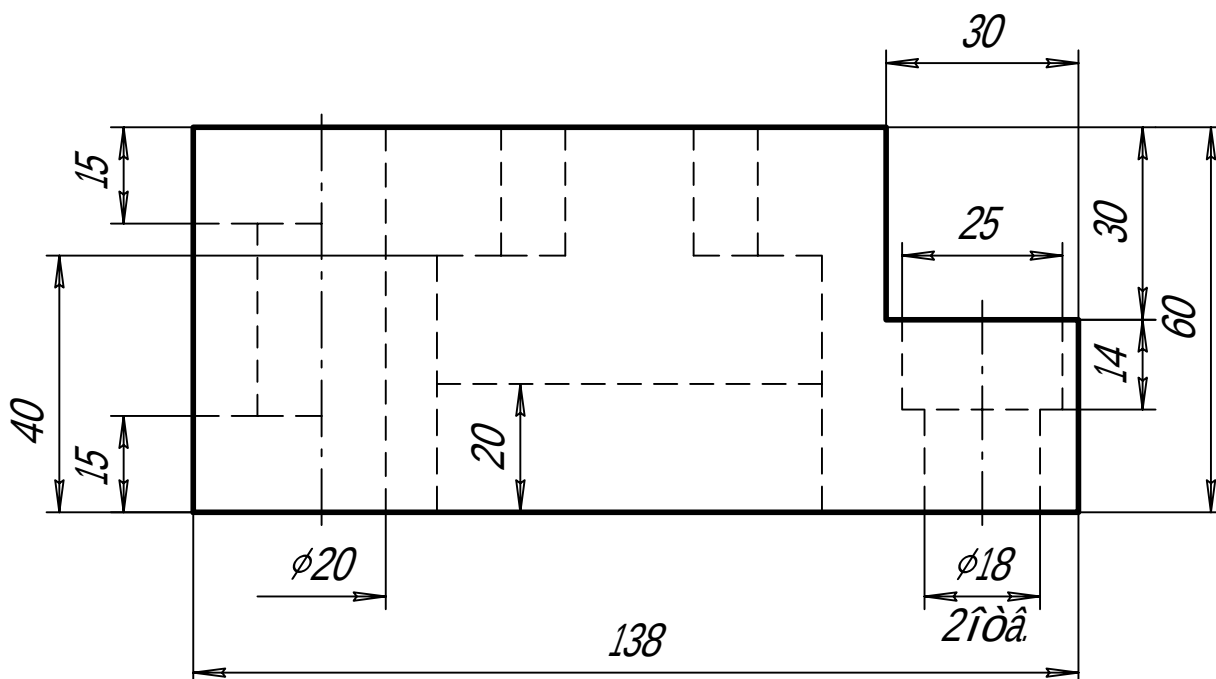


4T.51



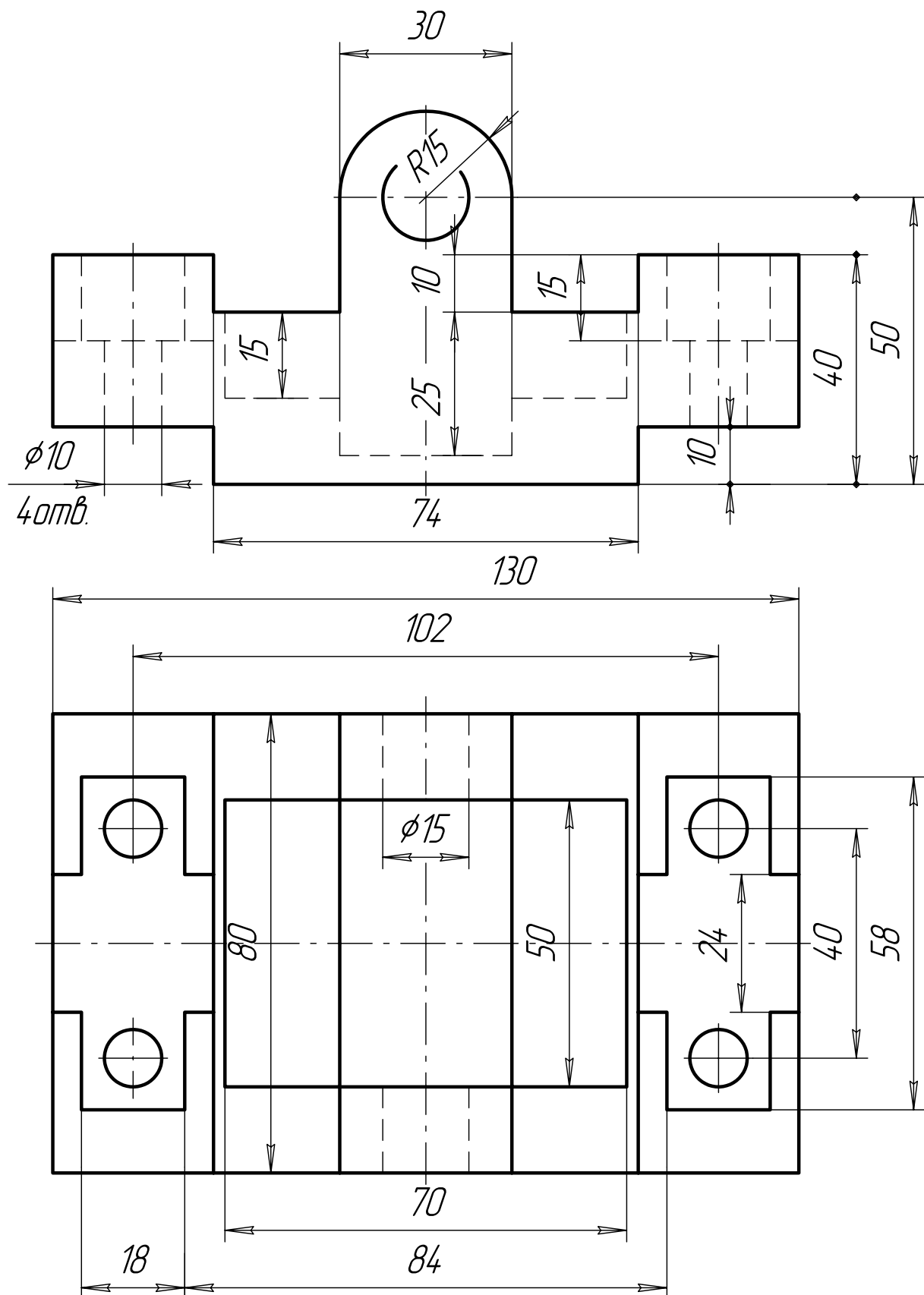


4T.52



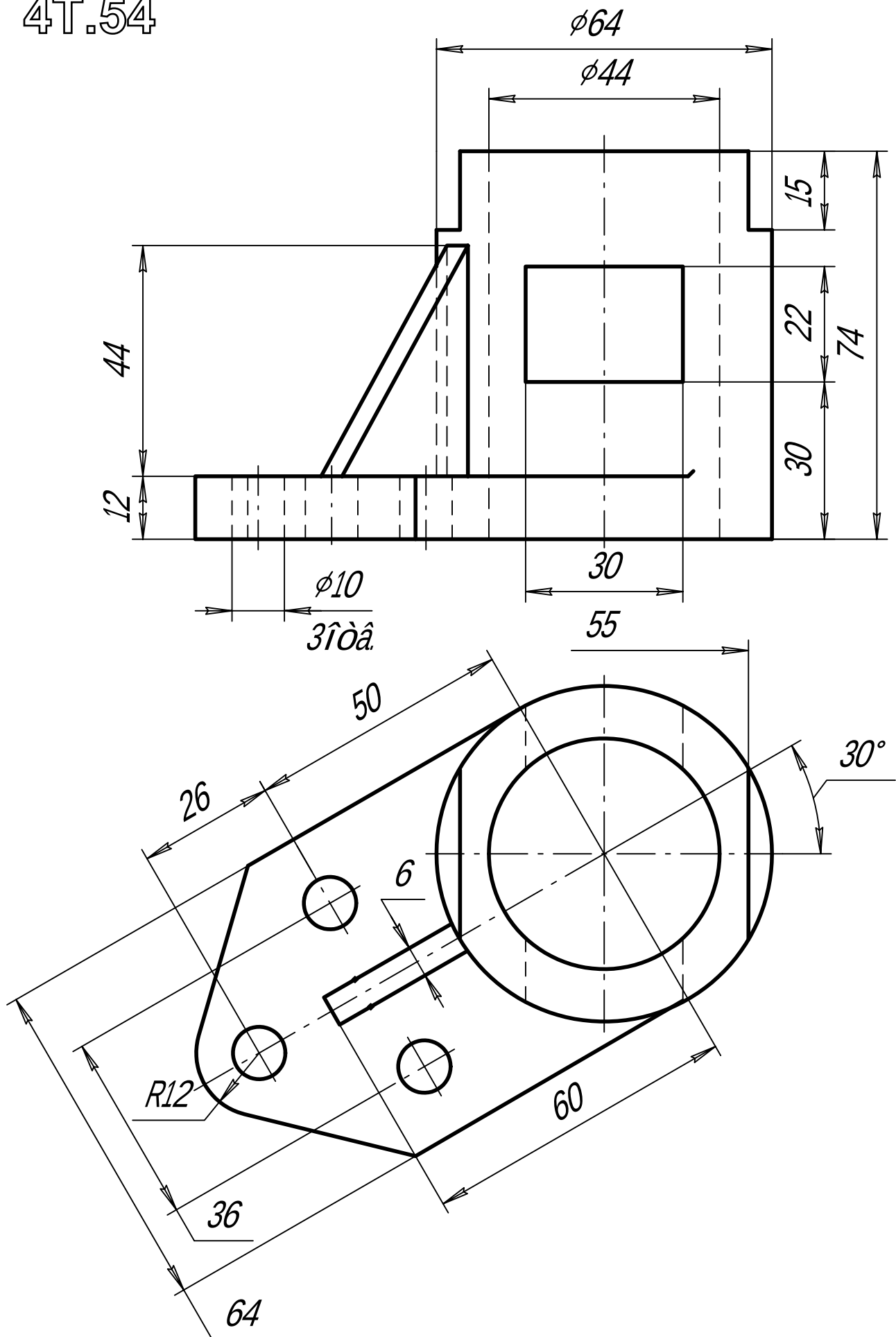


4T.53





4T.54



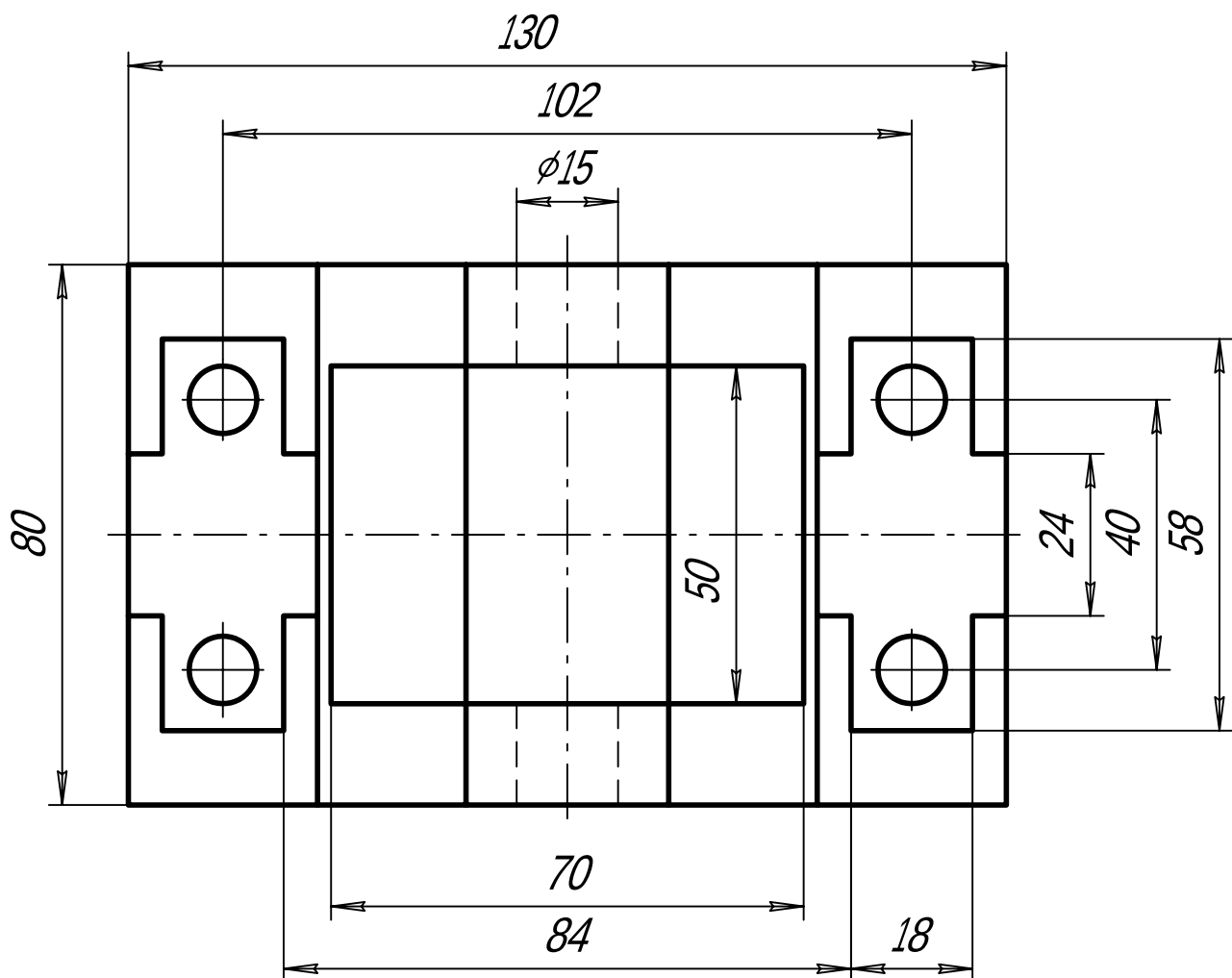
Technical drawing of a mechanical part, showing front and top views with dimensions.

Front View Dimensions:

- Overall width: 74
- Overall height: 50
- Left flange width: 15
- Left flange thickness: 10
- Right flange width: 15
- Right flange thickness: 10
- Central vertical section width: 30
- Central vertical section height: 25
- Central vertical section radius: R15
- Central vertical section hole diameter: $\phi 10$

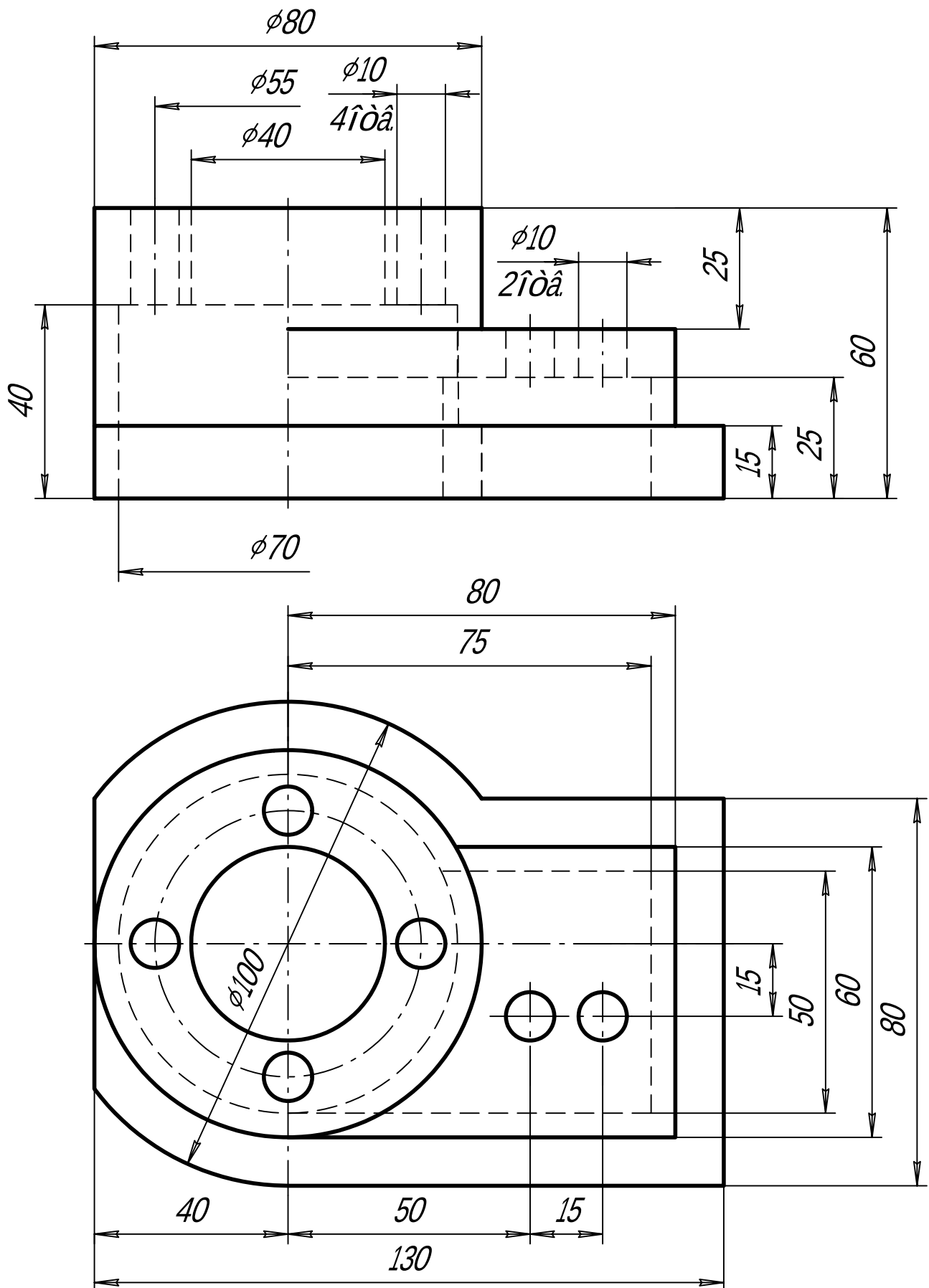
Top View Dimensions:

- Overall width: 74
- Overall height: 50
- Left flange width: 15
- Left flange thickness: 10
- Right flange width: 15
- Right flange thickness: 10
- Central vertical section width: 30
- Central vertical section height: 25
- Central vertical section radius: R15
- Central vertical section hole diameter: $\phi 10$



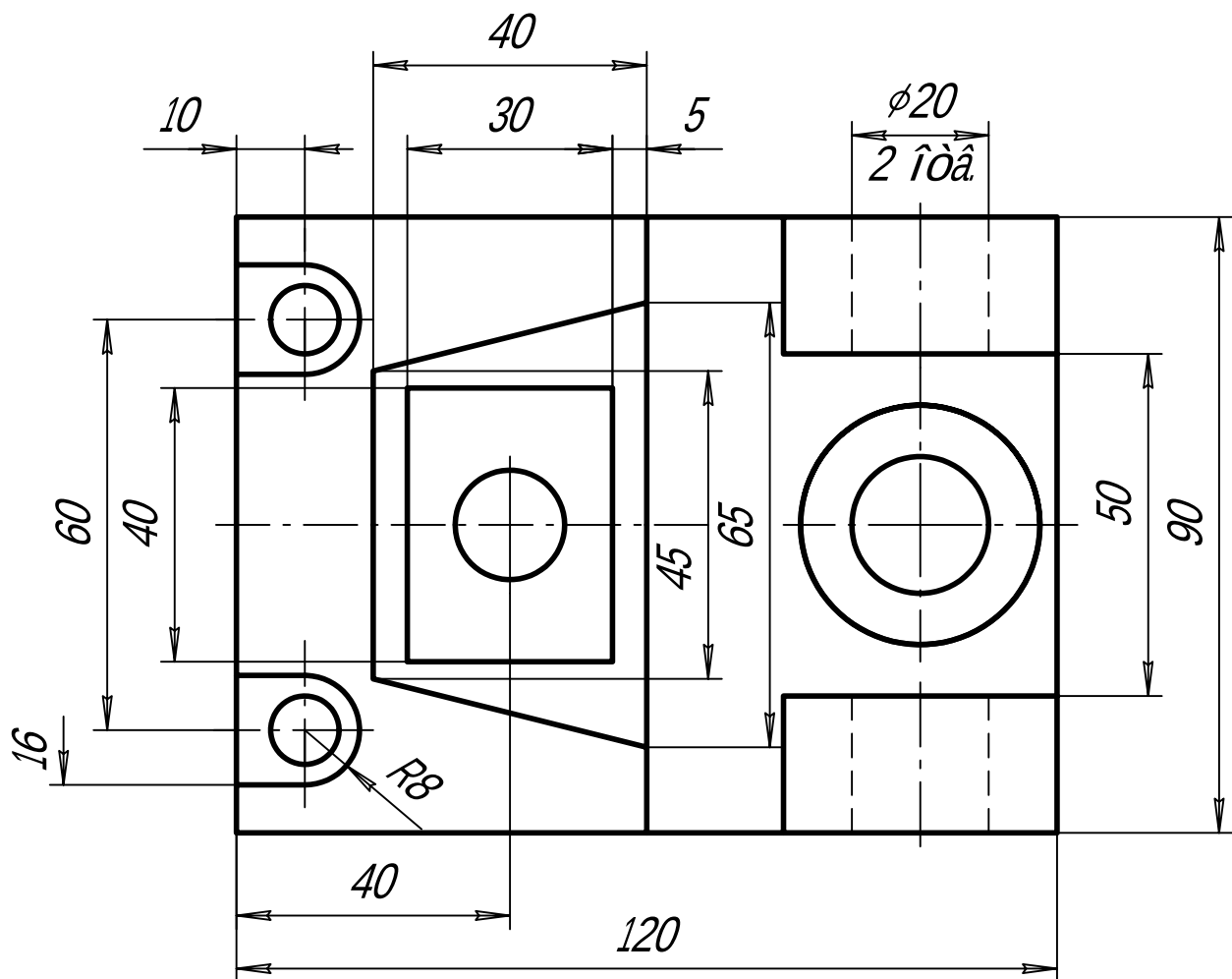
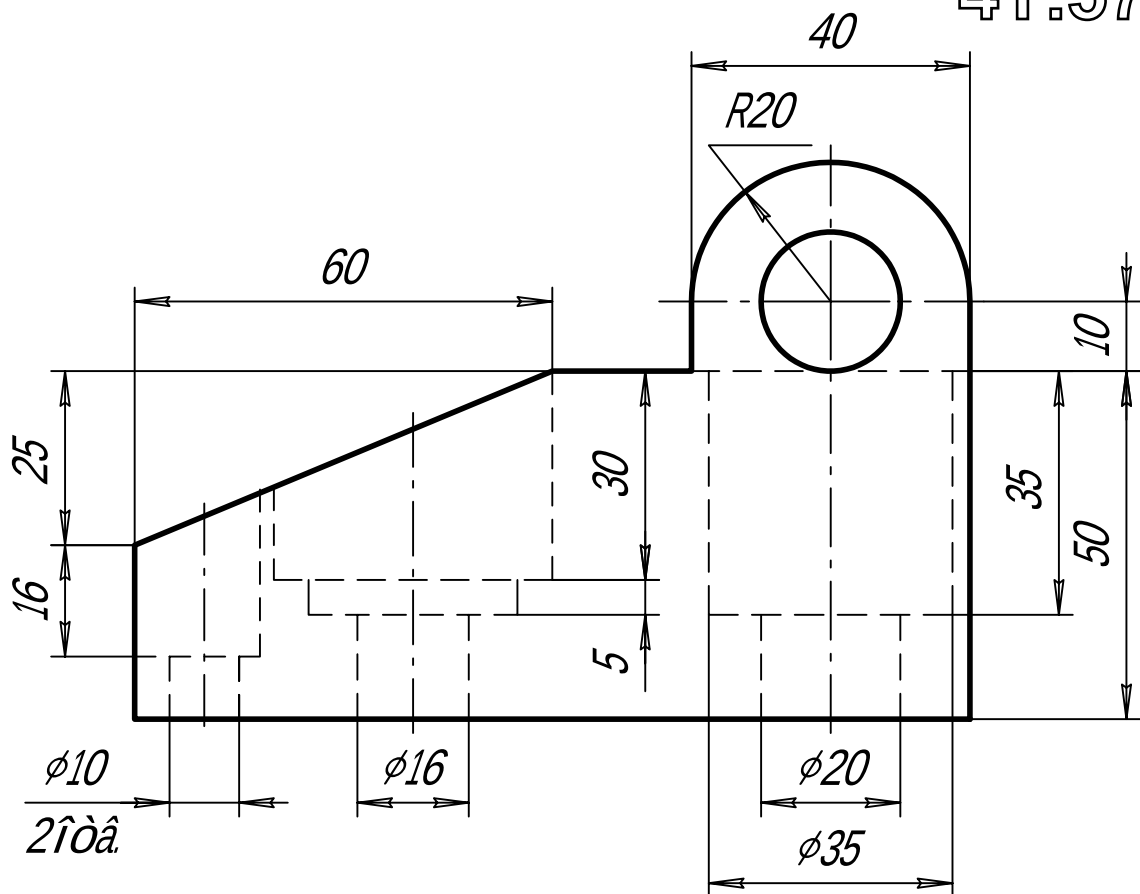


4T.56



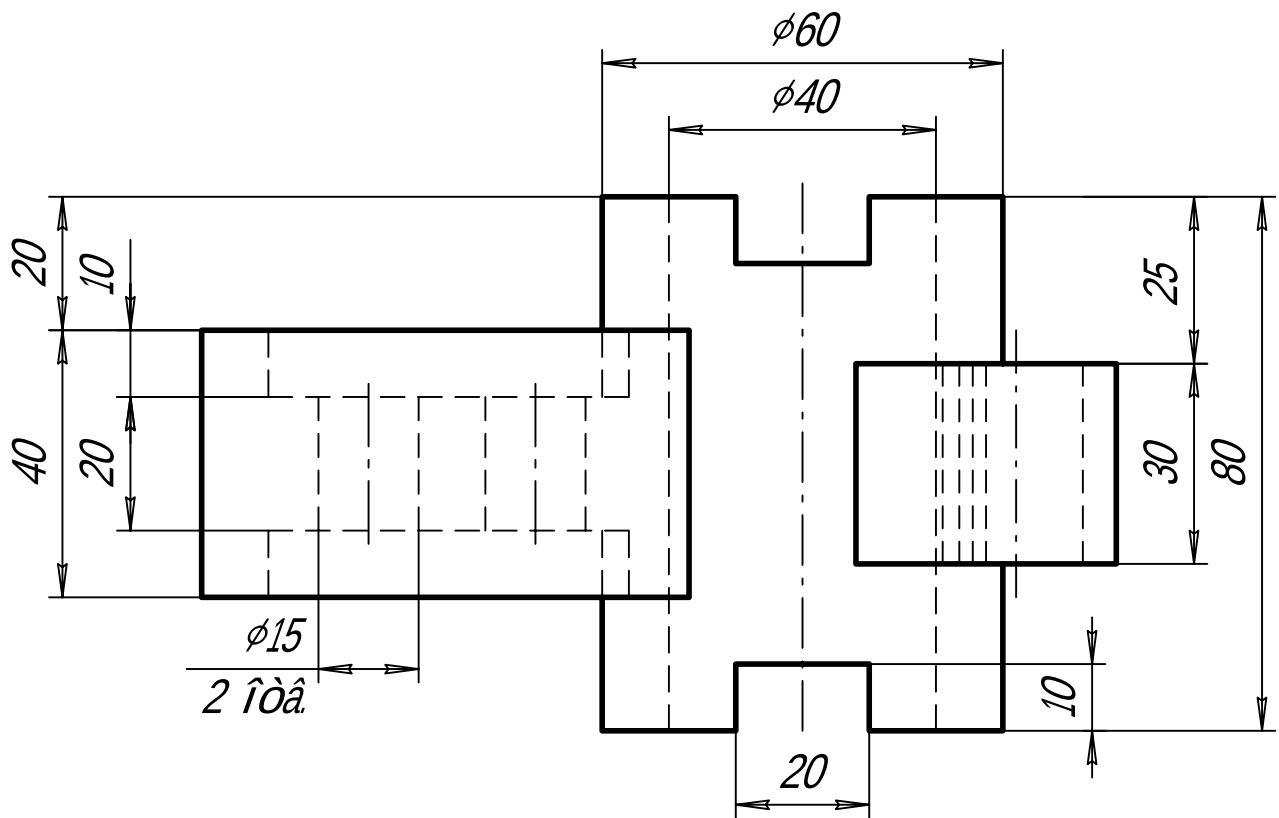


4T.57



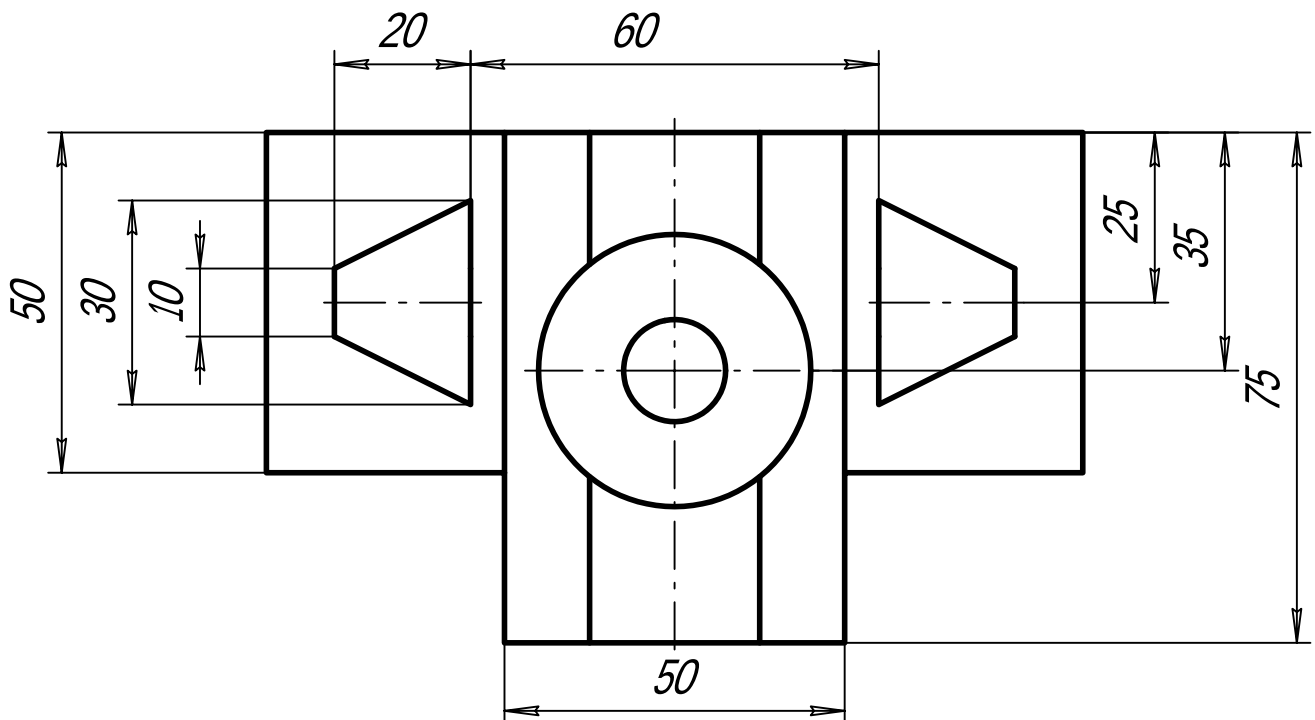
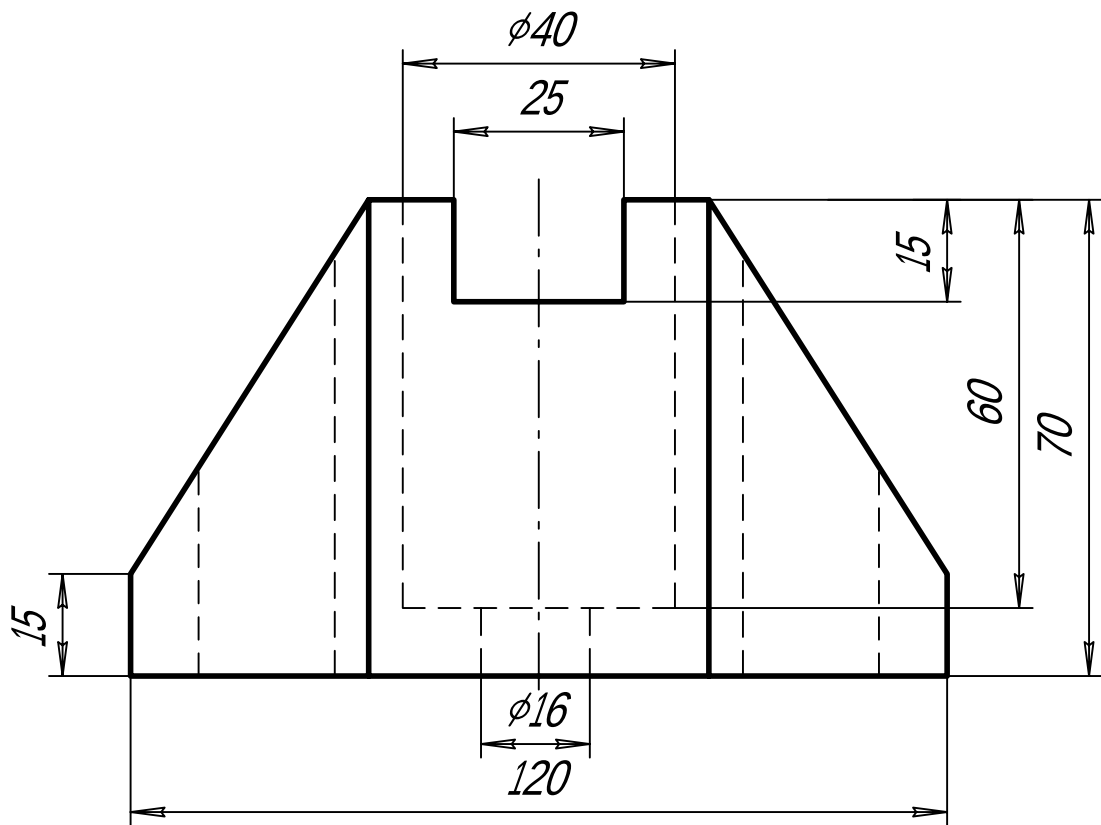


4T.58





4T.59



Technical drawing of a mechanical part showing front and top views with dimensions.

Front View Dimensions:

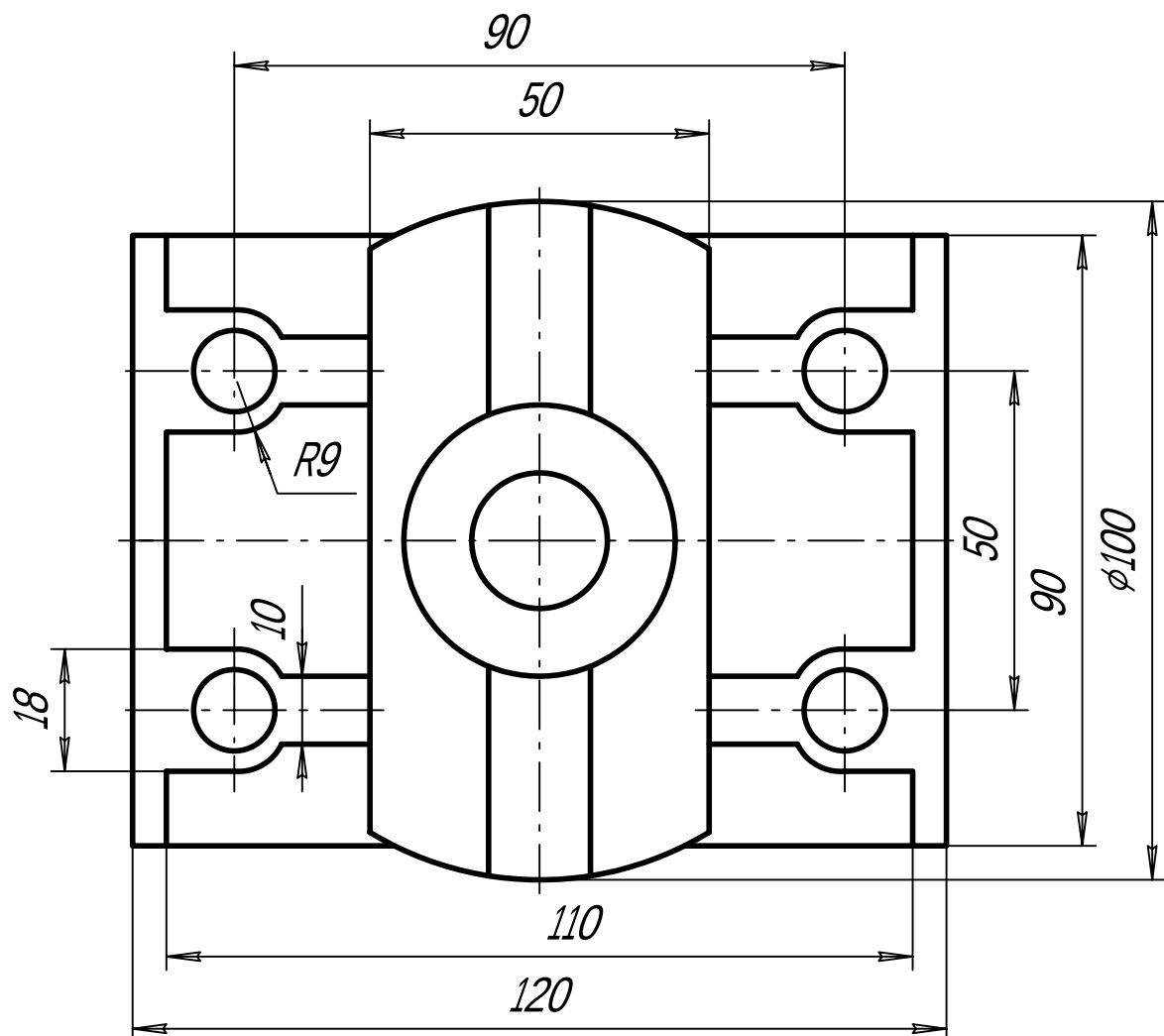
- Overall width: $\phi 40$
- Overall height: 65
- Top section height: 25
- Bottom section height: 25
- Central cutout width: 15
- Central cutout height: 15
- Left side cutout width: 15
- Left side cutout height: 15
- Right side cutout width: 15
- Right side cutout height: 15

Top View Dimensions:

- Overall width: $\phi 40$
- Overall height: 65
- Central cutout width: 15
- Central cutout height: 15
- Left side cutout width: 15
- Left side cutout height: 15
- Right side cutout width: 15
- Right side cutout height: 15

Sectional View Dimensions:

- Sectional view width: $\phi 20$
- Sectional view height: 40
- Sectional view cutout width: $\phi 12$
- Sectional view cutout height: 4





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