higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING GRAPHICS AND DESIGN

(Second Paper)

NQF LEVEL 3

(6021023)

11 December 2020 (Y-paper)
13:00–17:00

REQUIREMENTS: A2 Drawing Sheet
Drawing Instruments

This question paper consists of 9 pages.

545Q1N2011

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TIME: 4 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Use both sides of the drawing sheet.
5. A 20 mm border must be drawn on both sides of the drawing sheet.
6. All drawings, including the candidates' information, must be done in pencil.
7. A balanced layout is important. Candidates will be penalised for poor planning.
8. A radius curve stencil may be used to draw arcs.
9. Use your own discretion where dimensions are not given.
10. All drawing work must conform to the latest SABS 0111 Code of Practice for Engineering Drawing.
11. Work neatly.

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QUESTION 1

FIGURE 1, DIAGRAM SHEET 1 (attached) shows a table.

1.1 Draw the table, shown on diagram sheet 1, and print the answers to the following questions, using 3mm lettering. (2)

1.2 1.2.1 State the THREE stages of development by means of triangulation. (6)

1.2.2 Name the method used to construct an ellipse. (2)
[10]

QUESTION 2

FIGURE 2, DIAGRAM SHEET 2 (attached) shows TWO views of a machined part in third-angle orthographic projection.

DO NOT COPY THE GIVEN VIEWS.

2.1 Construct an isometric scale. (2)

2.2 Draw an isometric view of the machined part using the isometric scale. Point 'A' must be the lowest point of the isometric drawing. No hidden detail is required. (13)
[15]

QUESTION 3

FIGURE 3, DIAGRAM SHEET 3 (attached) shows two views of a truncated pipe, with both ends open.

3.1 Draw the given views using a scale of 1:1 (4)

3.2 Develop the surface of the pipe (13)
[17]

QUESTION 4

FIGURE 4, DIAGRAM SHEET 4 (attached) shows TWO views of an assembly, in third-angle orthographic projection.

Draw detailed drawings of item 1, using a scale of 1:1.

4.1 A full sectional front view (13)

4.2 A full sectional top view on cutting plane B-B (11)
[24]

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QUESTION 5

FIGURE 5, DIAGRAM SHEET 5 (attached) shows the components of a Pipe Clamp, in third angle orthographic projection. The parts list is as follows:

ITEM	NAME	NO PER ASSY
1	Base	1
2	Frame	1
3	Jaw	2
4	Worm Screw Lever	1
5	M10 Bolt	2
6	Hook	1
7	Pin	2

5.1 Draw an assembly drawing, according to scale 1:1, a full sectional front view of the Pipe Clamp. (25)

5.2 Insert the item numbers on the assembly drawing (7)

5.3 Insert the title and scale, centrally, below the assembly drawing (2)
[34]

TOTAL: 100

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DIAGRAM SHEET 1

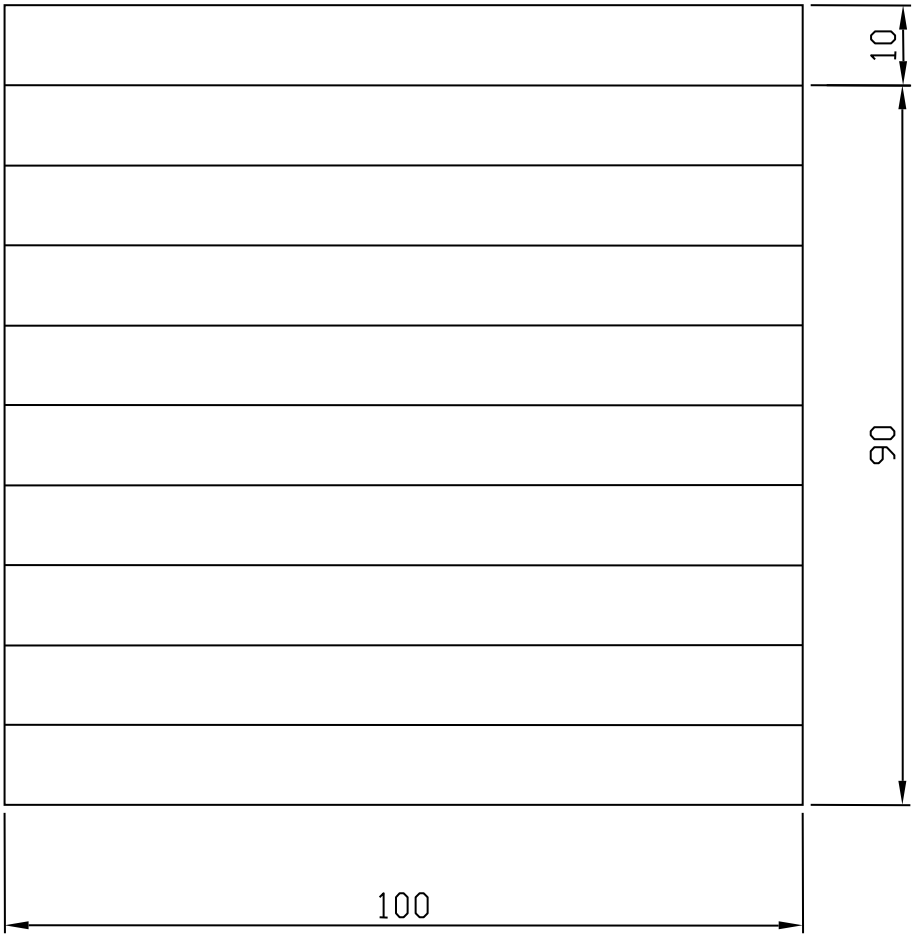


FIGURE 1

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DIAGRAM SHEET 2

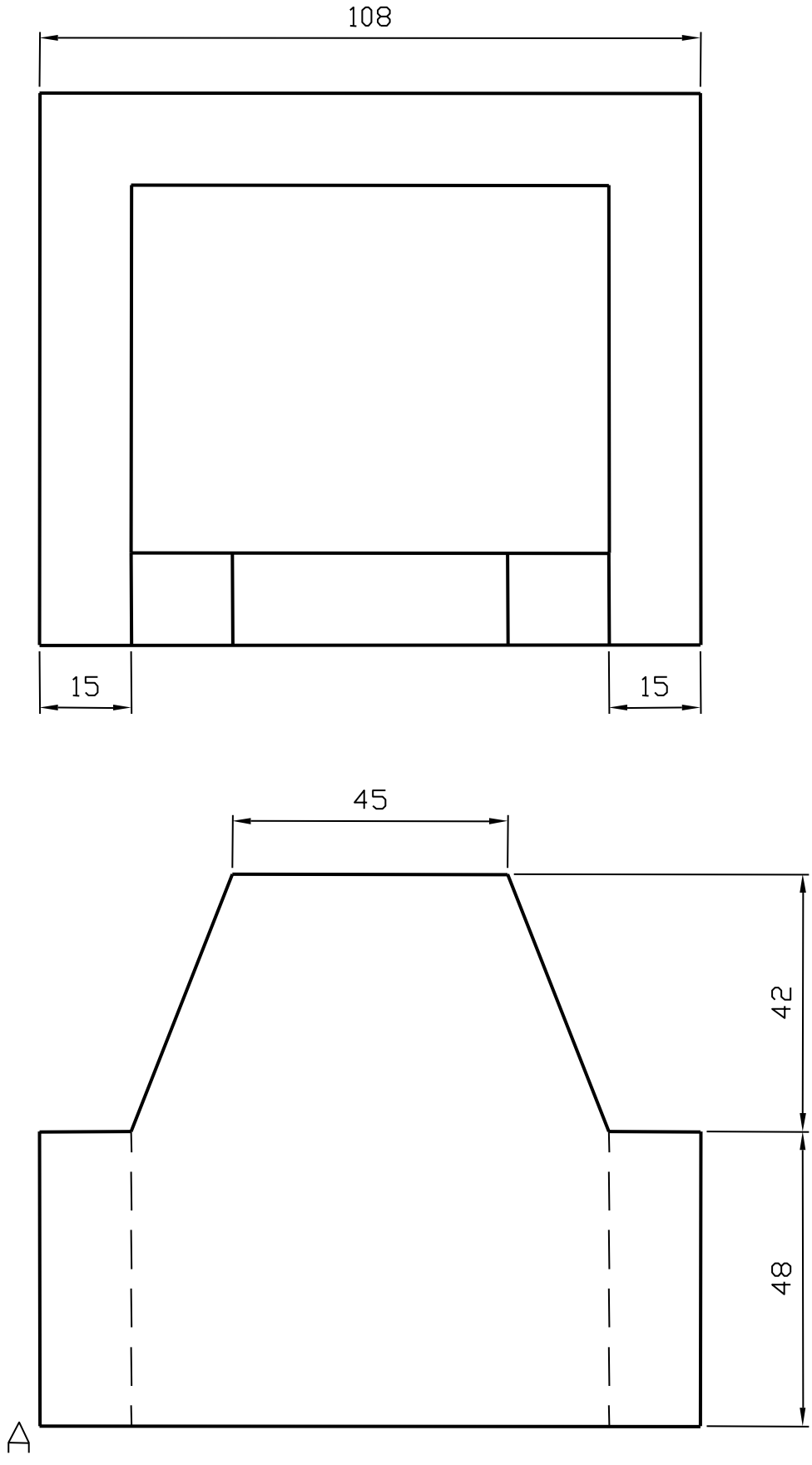


FIGURE 2

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DIAGRAM SHEET 3

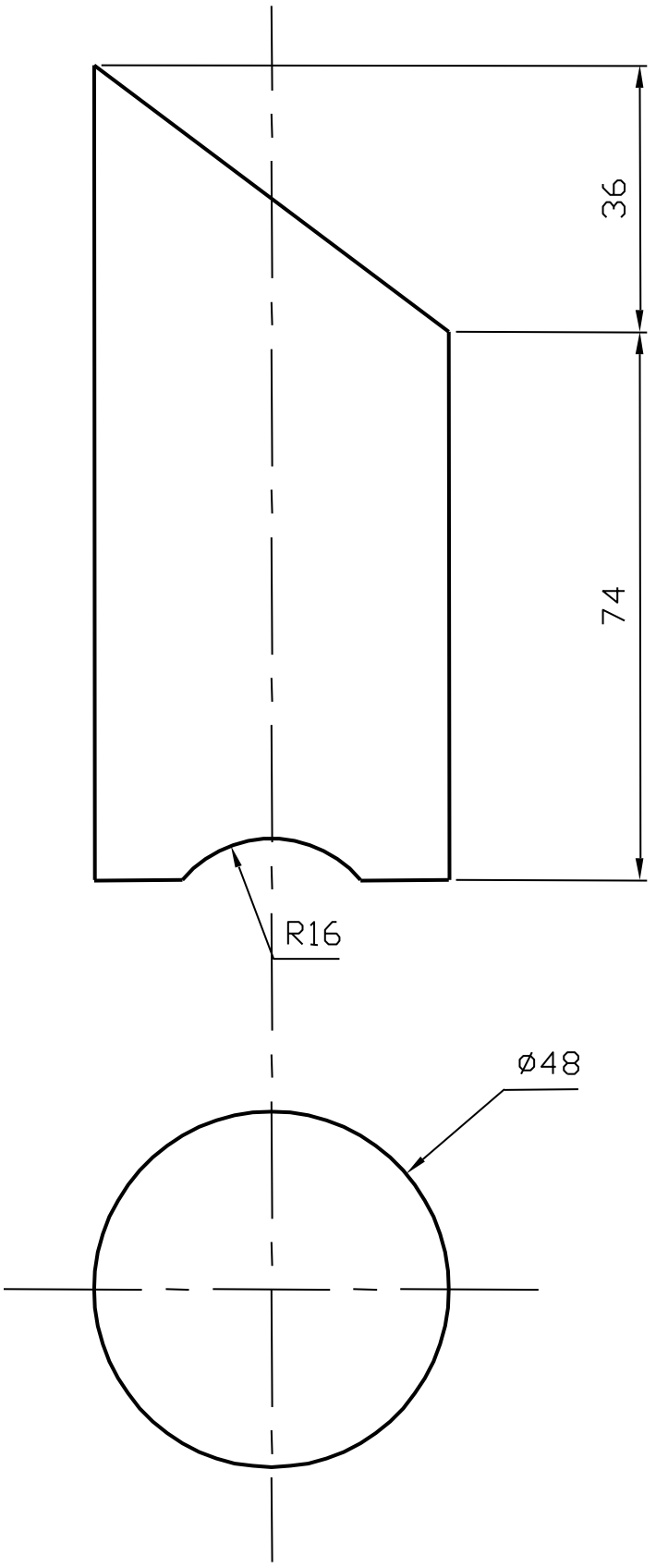


FIGURE 3

DIAGRAM SHEET 4

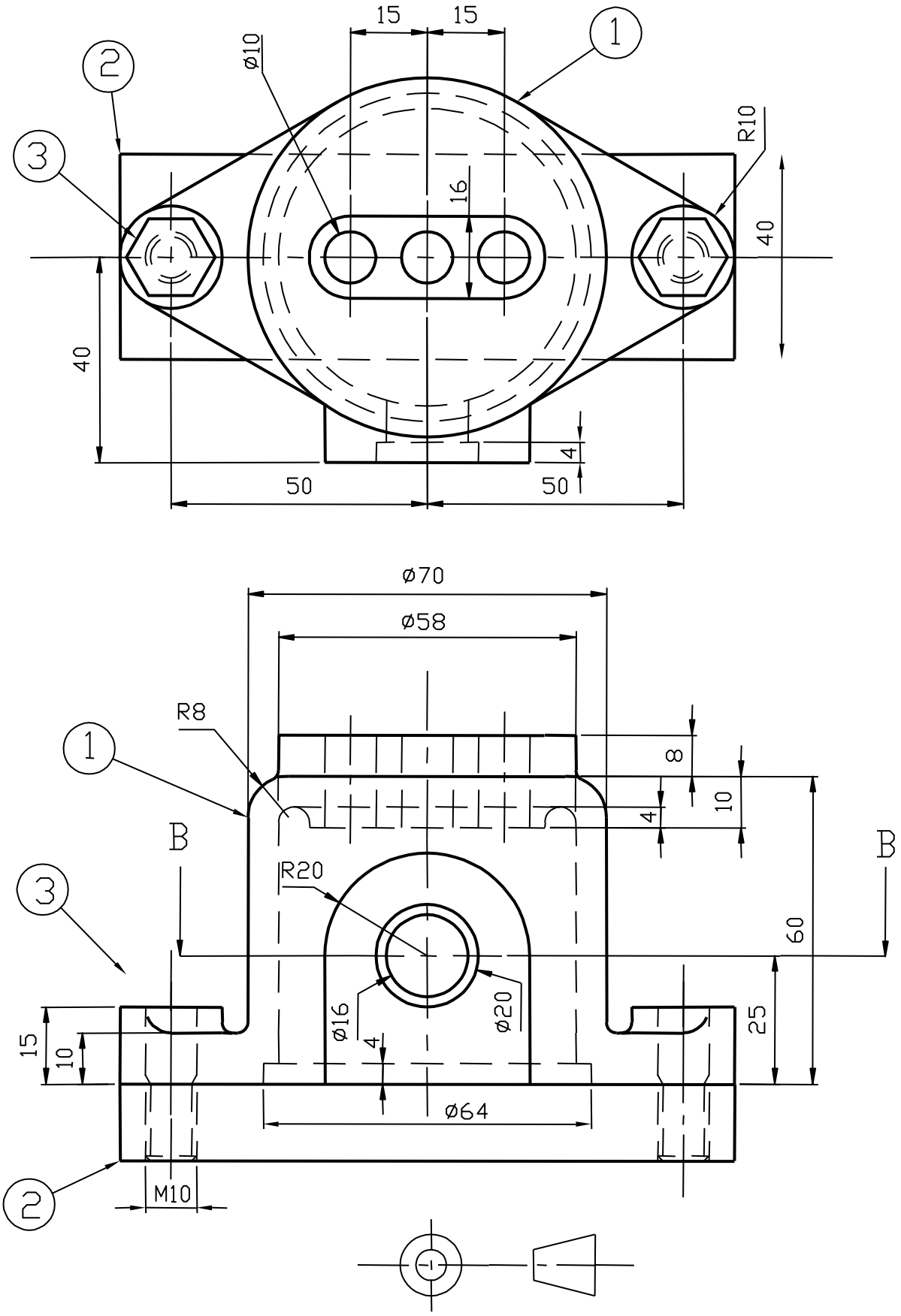


FIGURE 4

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DIAGRAM SHEET 5

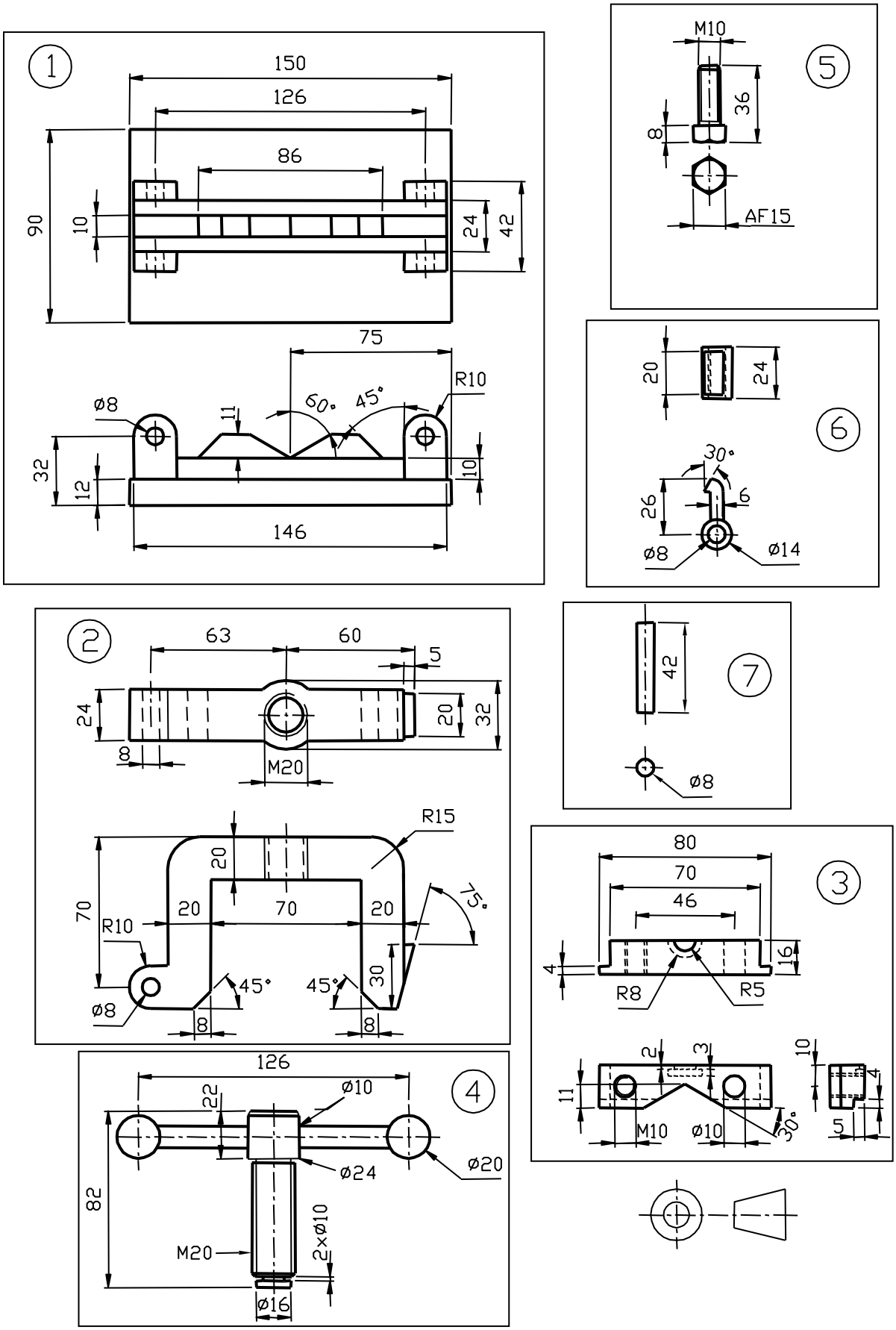


FIGURE 5

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