

三、投影基础 3-1 三视图

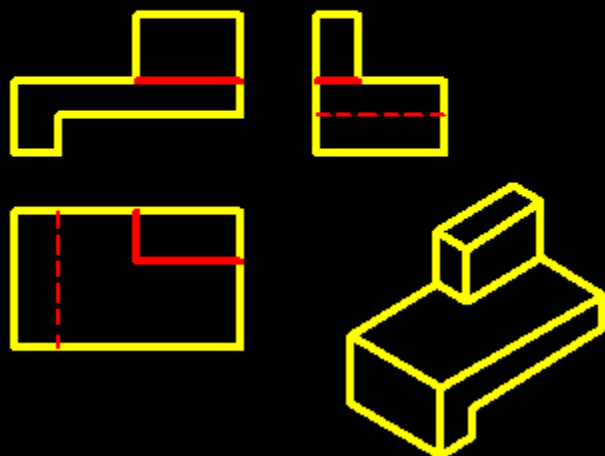
1. 补画下列视图中所缺的线段。

<p>11</p>	<p>12</p>
<p>13</p>	<p>14</p>

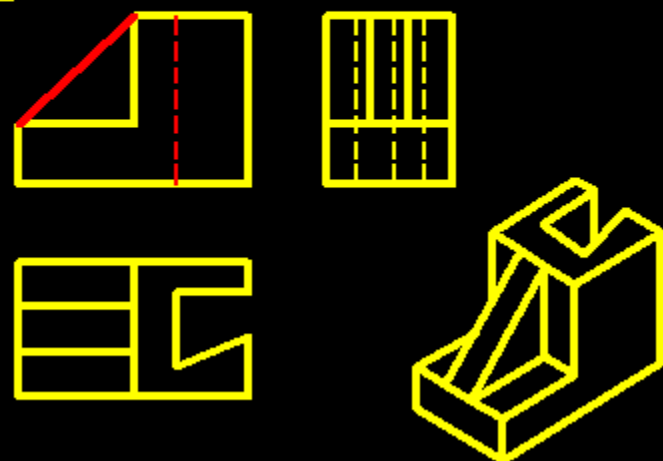
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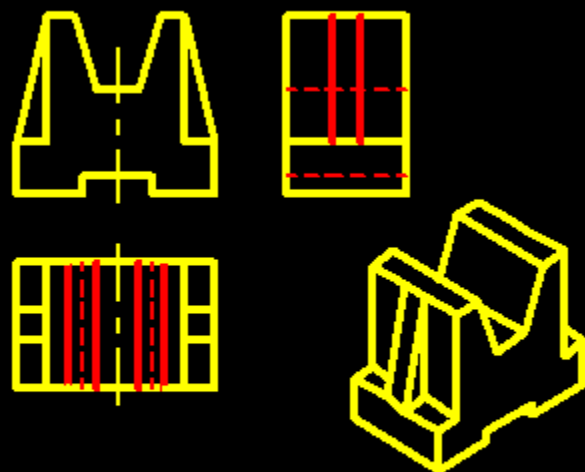
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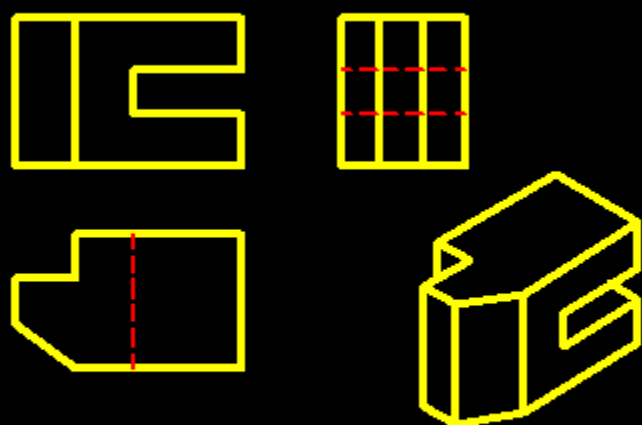
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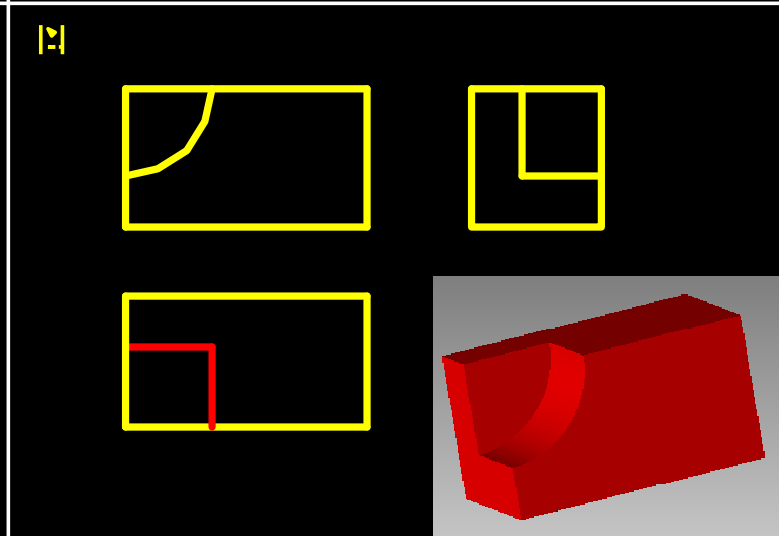
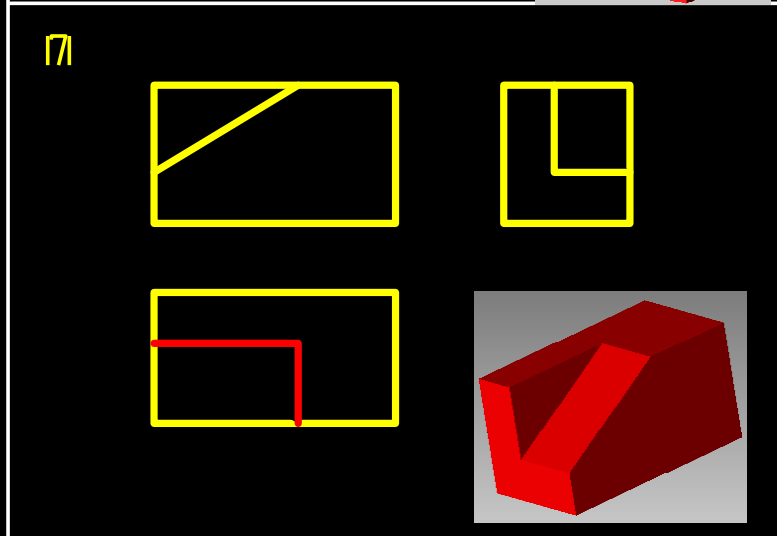
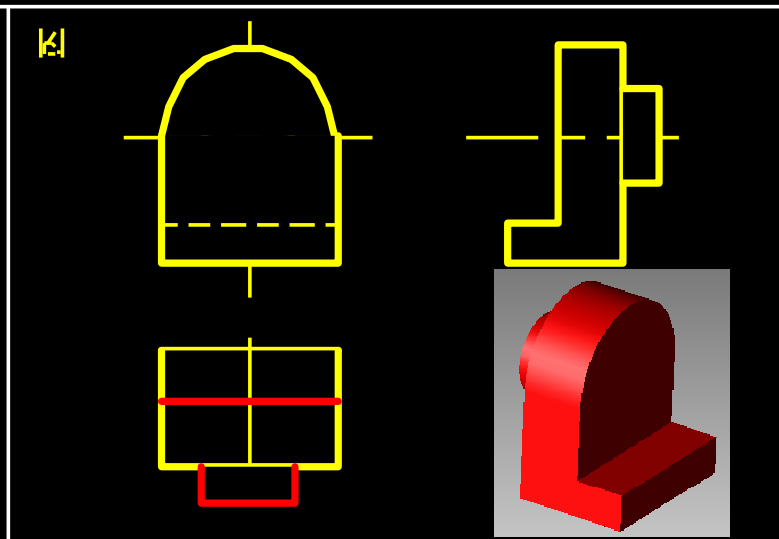
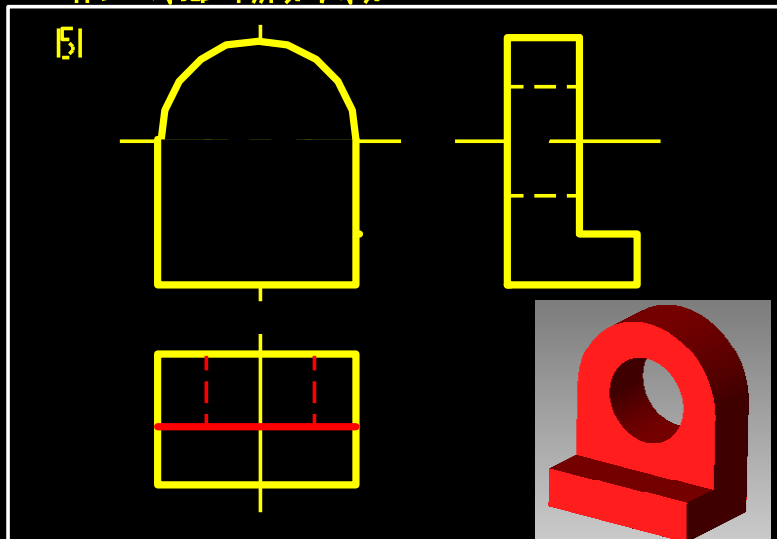
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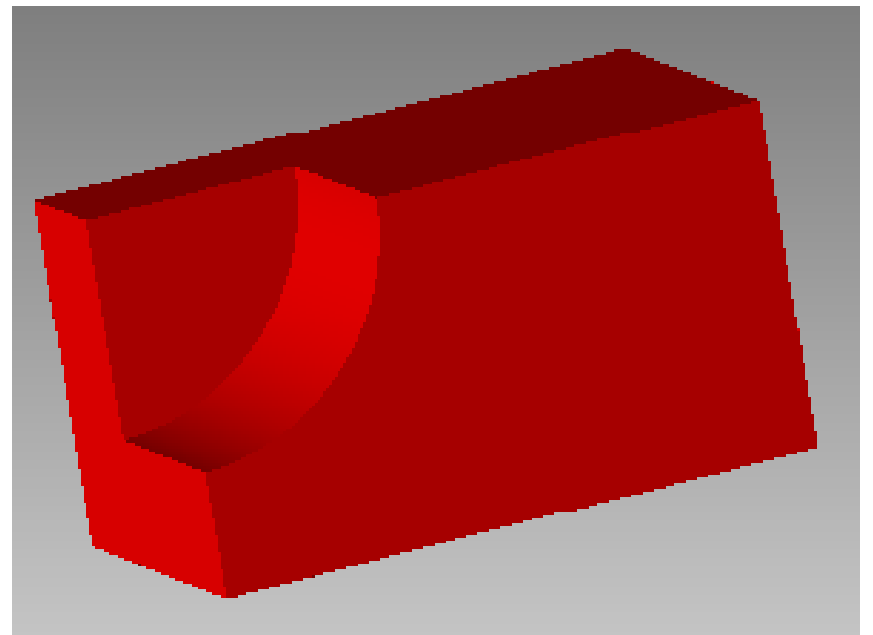
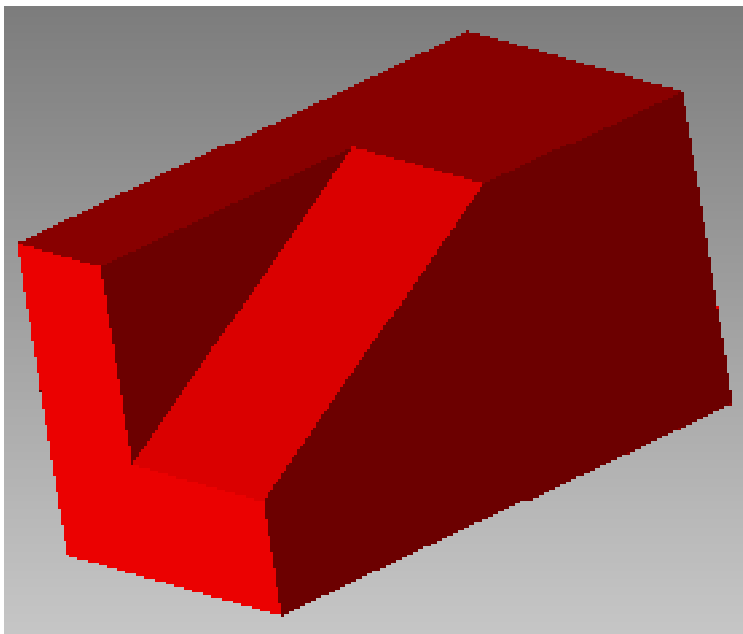
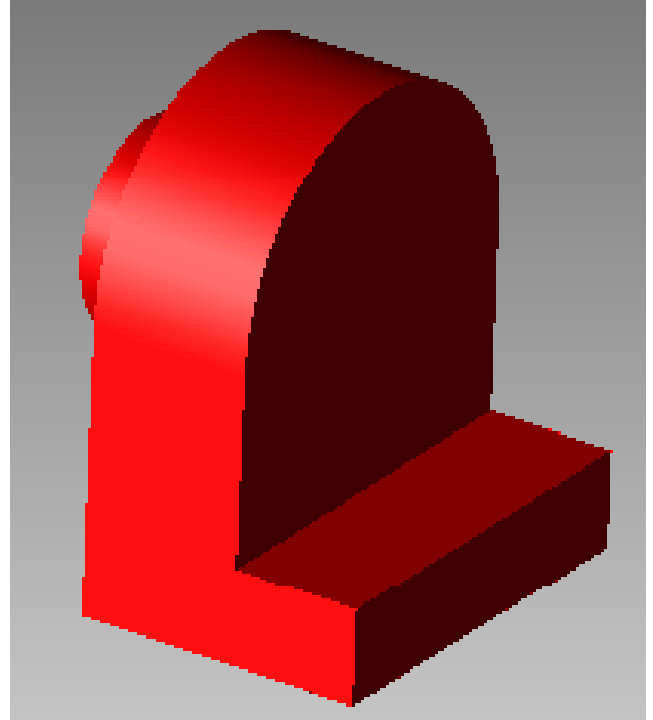
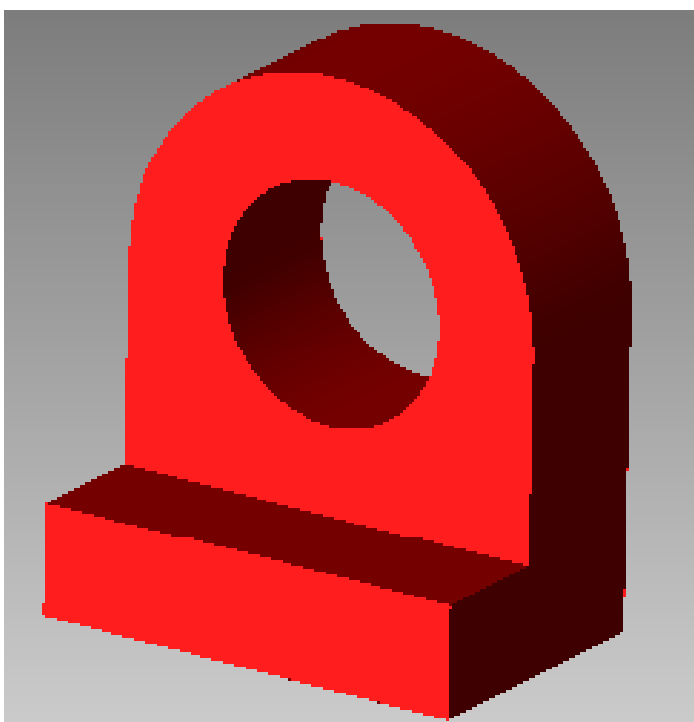


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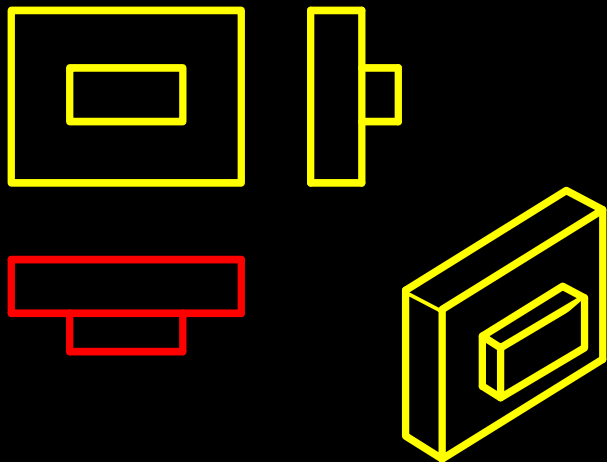
1. 补画下列视图中所缺的线段。



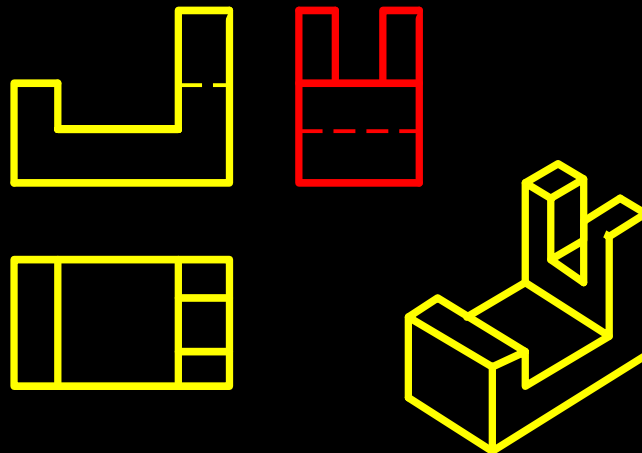


2. 根据立体图，补画其余视图。

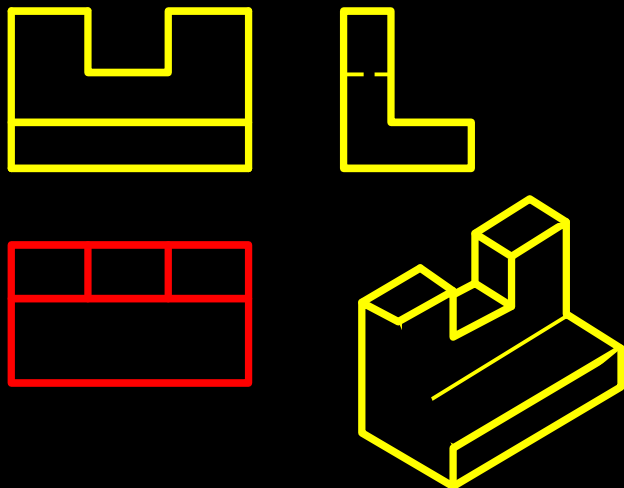
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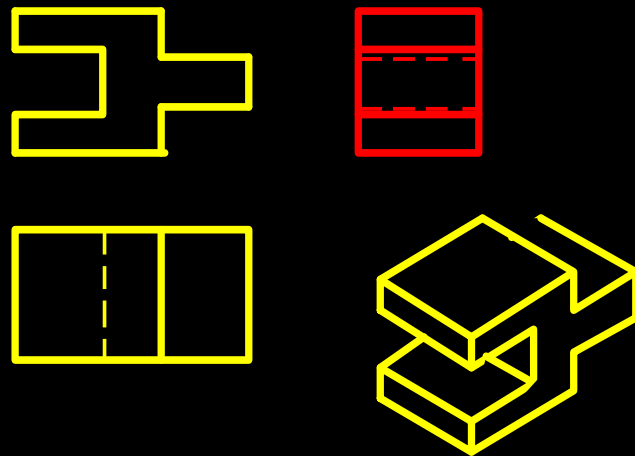
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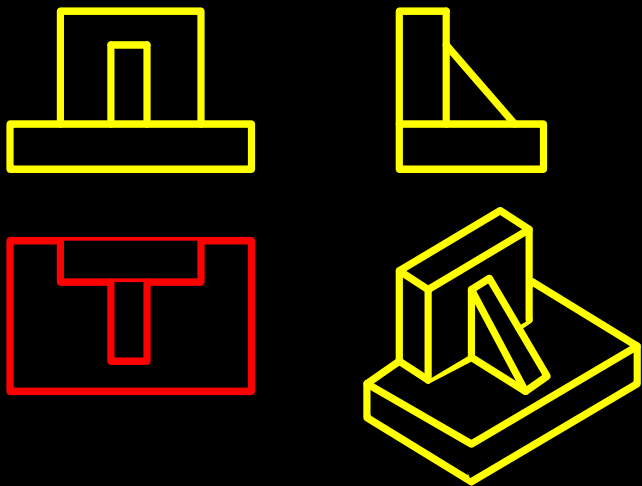


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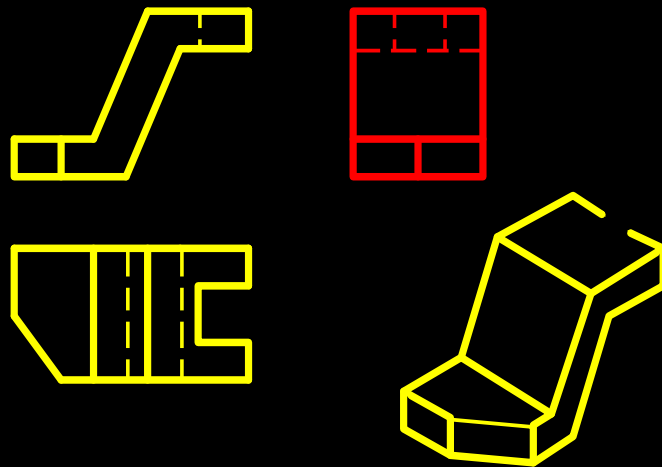


2. 根据立体图，补画其余视图。

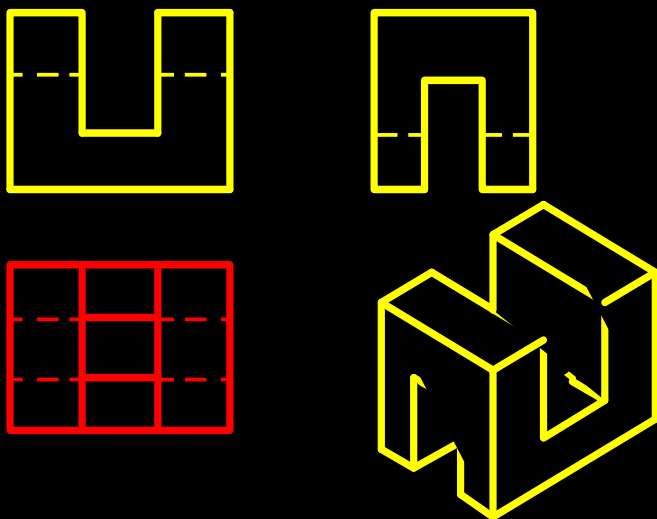
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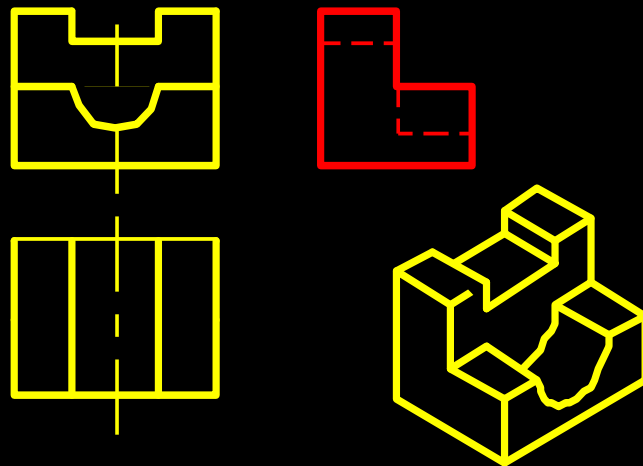
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171

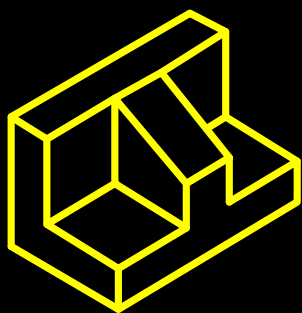
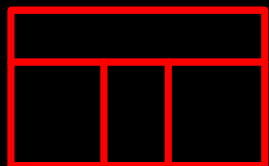
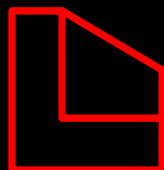
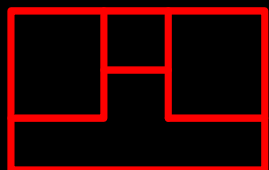


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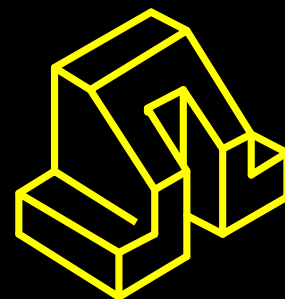
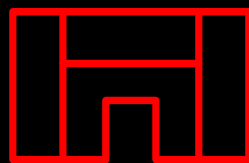
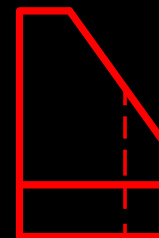
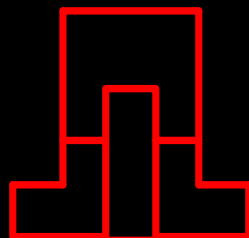


3. 根据立体图：画出其三视图。

|1|

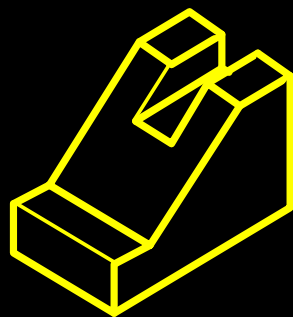
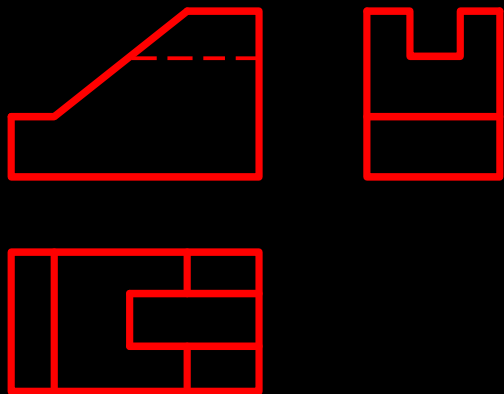


|2|

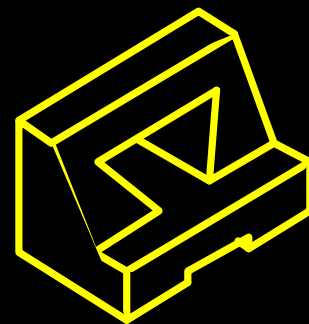
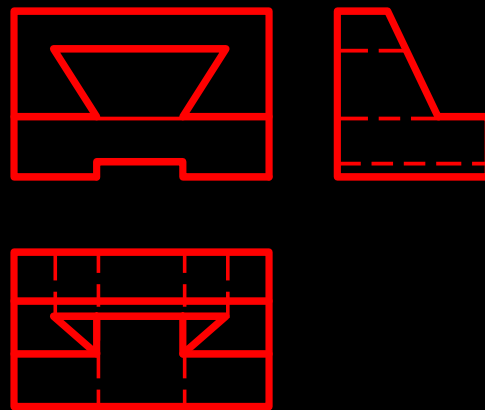


根据立体图，画出其三视图。

13

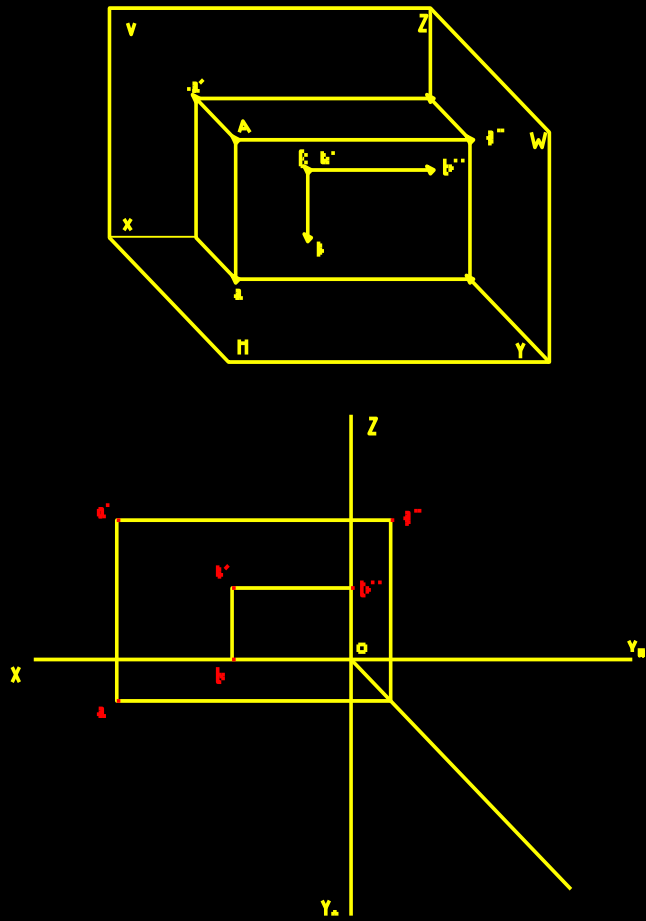


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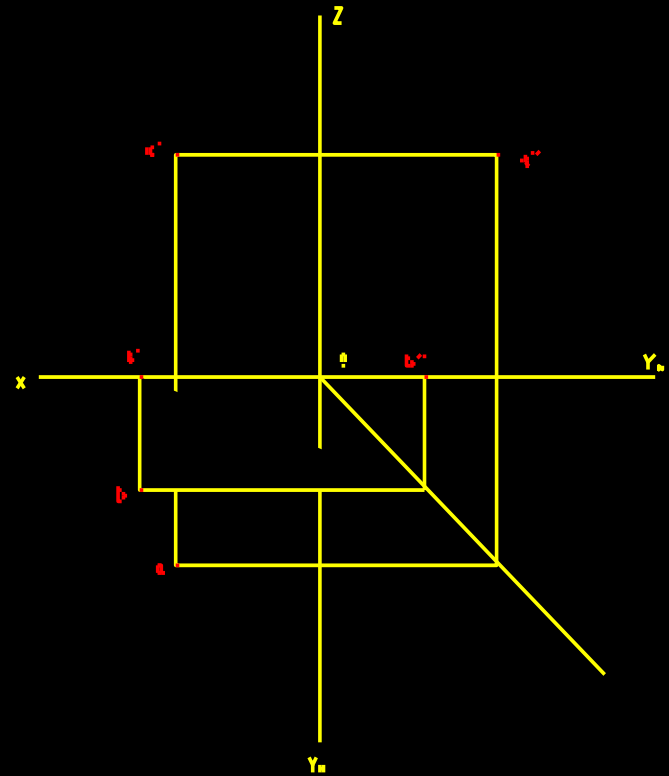


3-2. 点、直线的投影

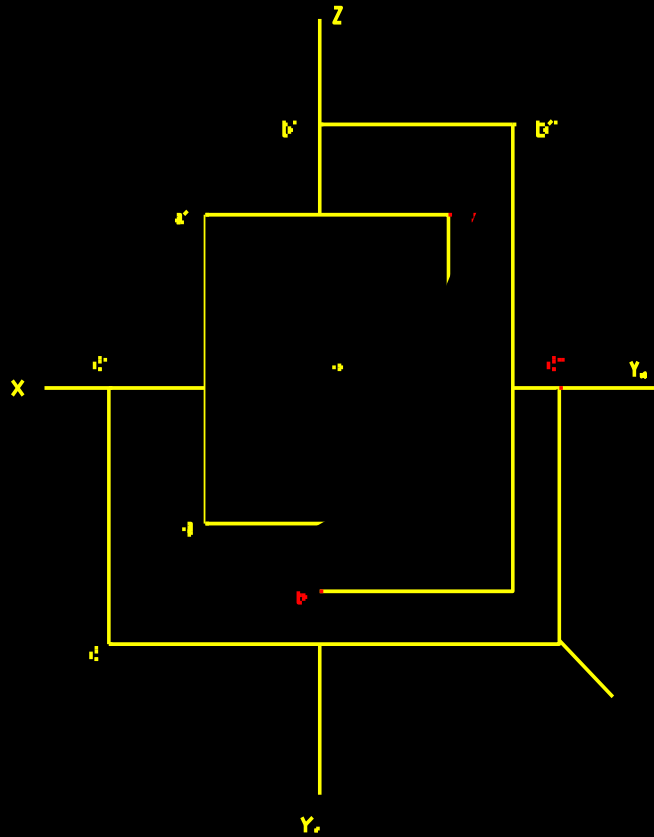
11 根据A、B两点的空间位置，画出其三面投影图（尺寸直接从图中量出，但不标注）



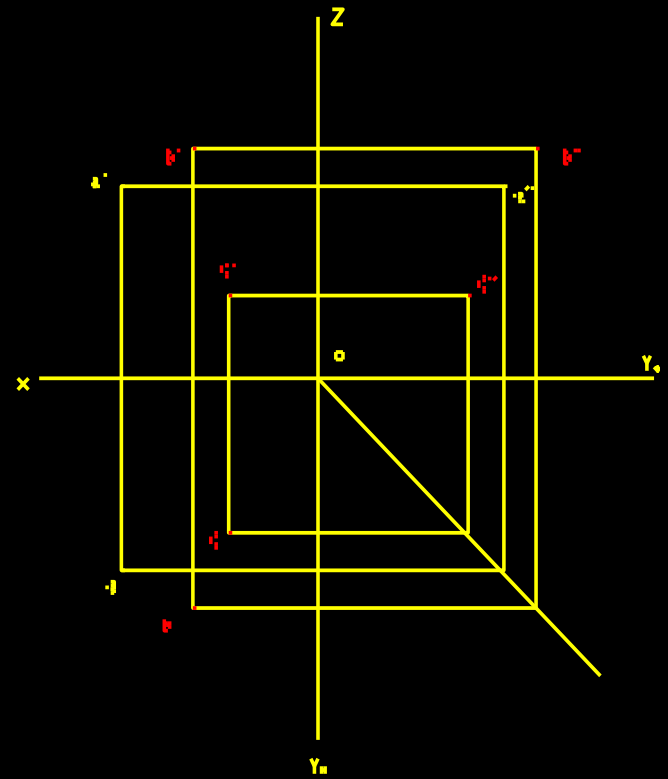
12 已知A (20, 25, 30)、B (25, 15, 0)、C (15, 0, 10)，作出其三面投影图。



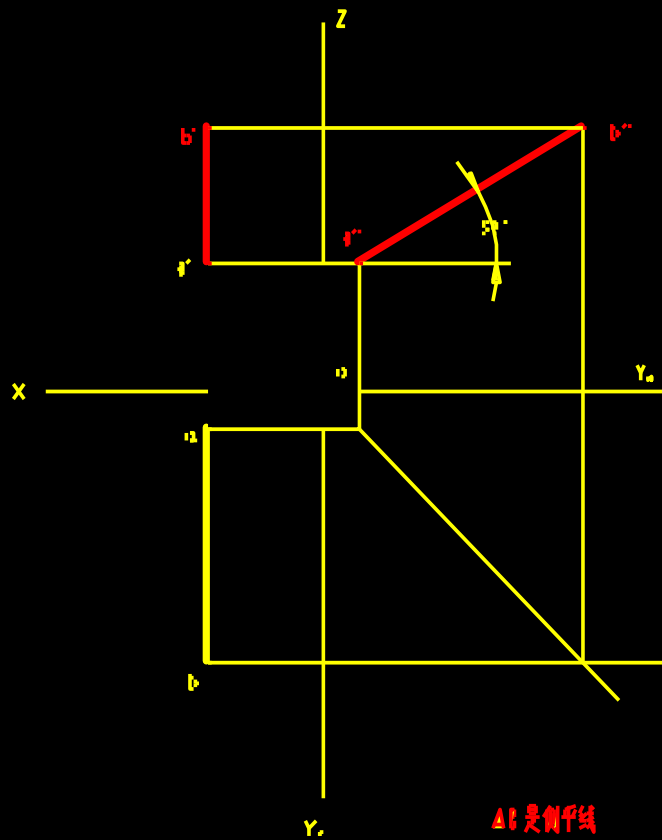
13 根据A、B、C的两面投影，画出其第三投影。



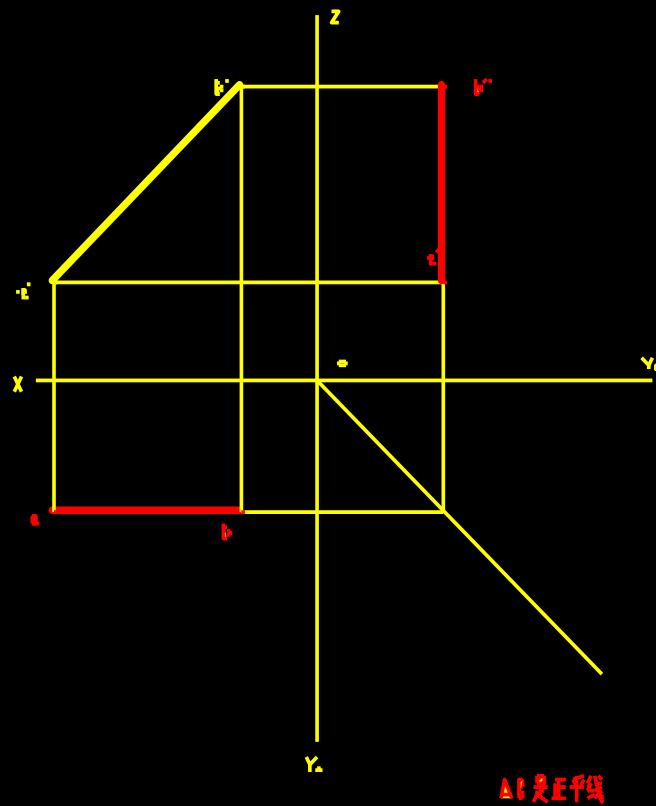
14 已知点A的投影，求作点B和C的投影，点B在A右10mm、前5mm、上5mm处，点C在点A右15mm、后5mm、下15mm处。



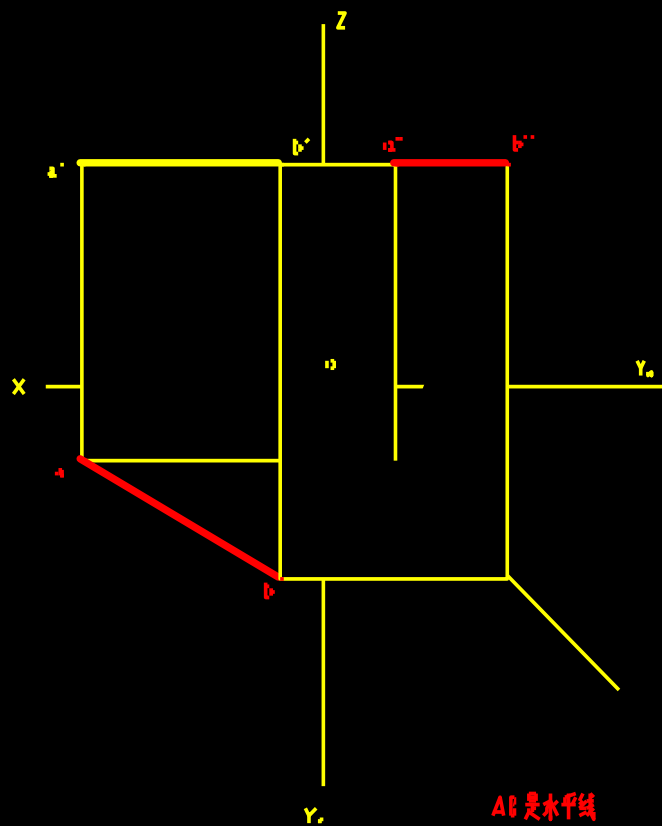
13 已知AB与H面的夹角为 30° ,求直线AB的V、W面投影,并判别其对投影面的相对位置。



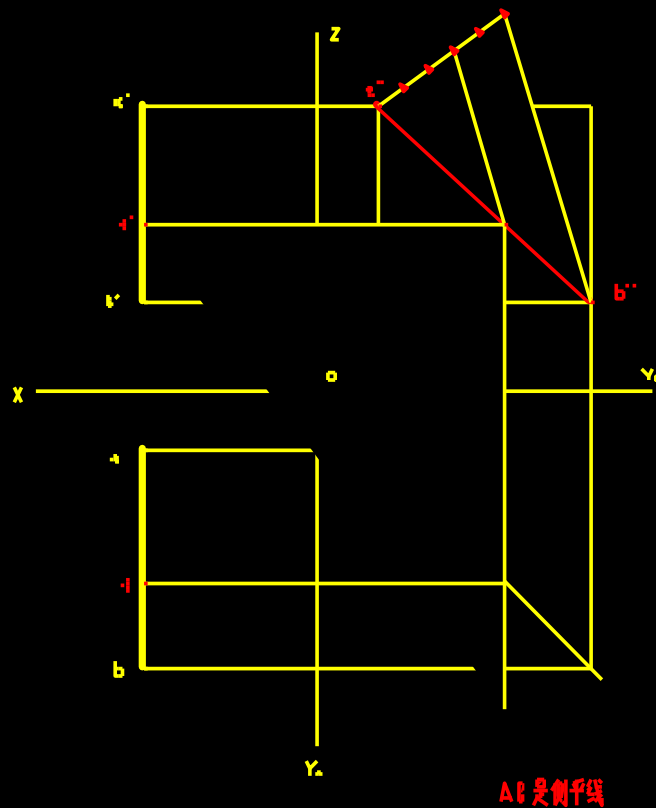
14 已知直线AB平行于V面,且距V面 $12mm$,求直线AB的H、W面投影,并判别其对投影面的相对位置。



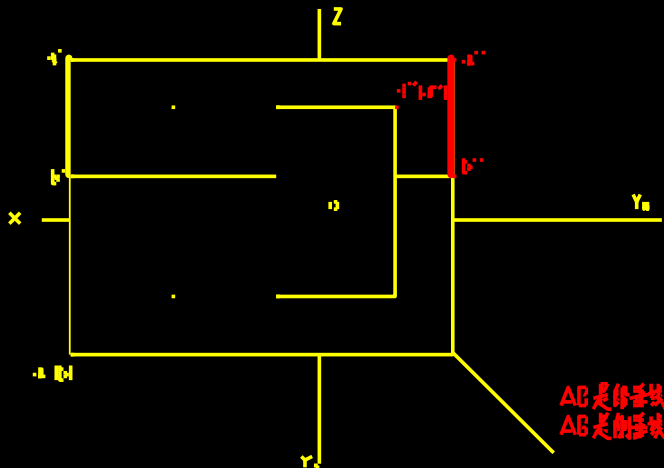
例 已知直线AB的端点A距V面10mm, 且与V面的夹角为 30° , 求其H、W面投影, 并判断其对投影面的相对位置。



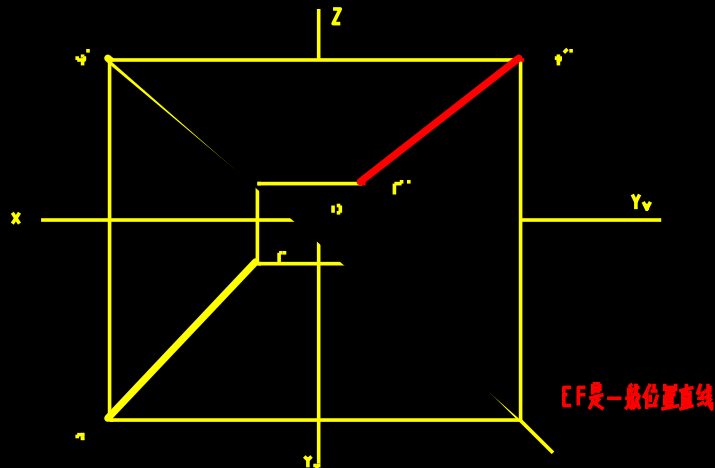
例 求作直线AB的侧面投影, 并在直线上取点C, 使 $AC:CB=5:2$, 并判断其对投影面的相对位置。



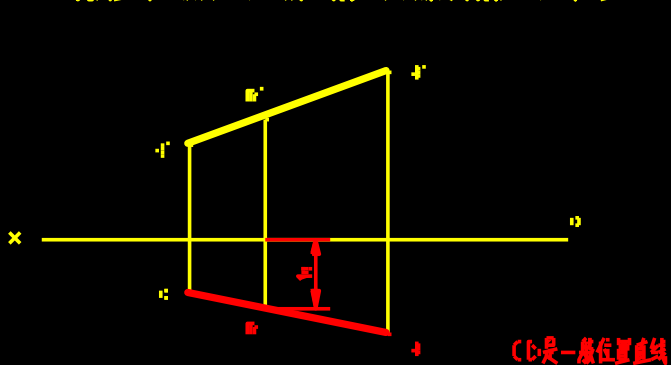
10 完成直线AB、CD的其余投影,并判断其对投影面的相对位置。



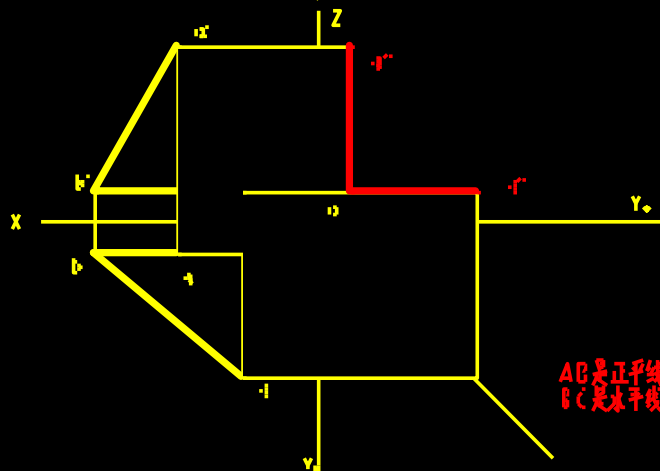
11 求作直线EF的第三投影,并判断其对投影面的相对位置。



12 已知直线CD及其上点M的正面投影和CD一端C的水平投影,若点M距V面10mm,试完成直线CD及其上点M的水平投影,并判断其对投影面的相对位置。

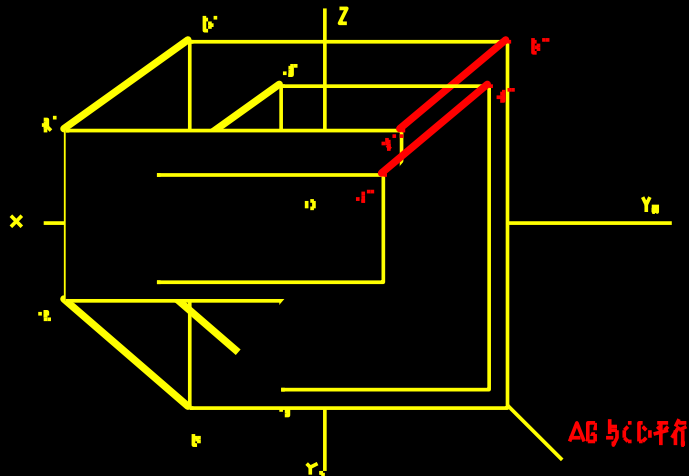


13 求作直线AB、BC的第三投影,并判断其对投影面的相对位置。

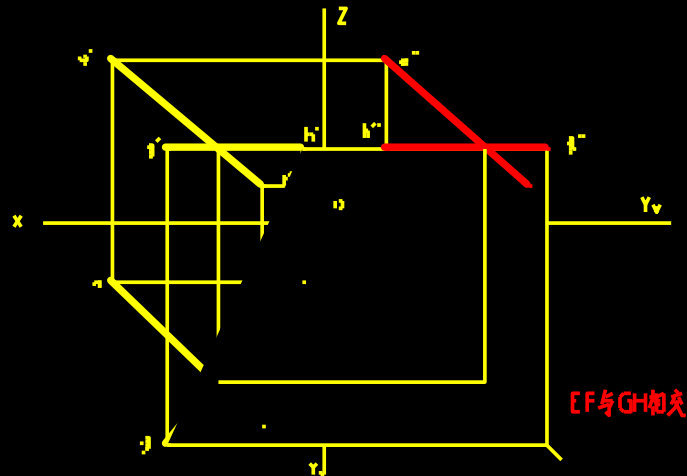


3-3 两直线的相对位置

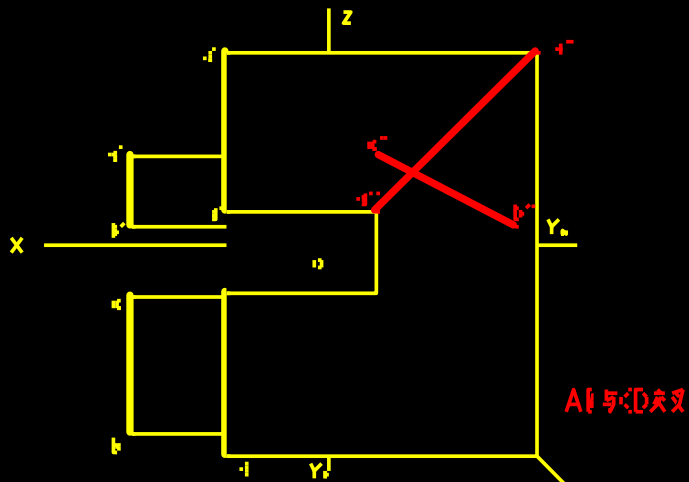
1 求作直线AB、CD的第三投影,并说明其空间相对位置。



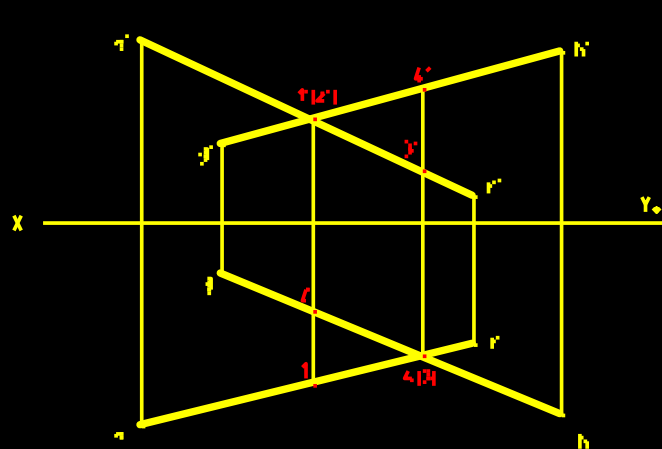
2 求作直线EF、GH的第三投影,并判别其空间相对位置。



3 求作直线AB、CD的第三投影,并说明其空间相对位置。

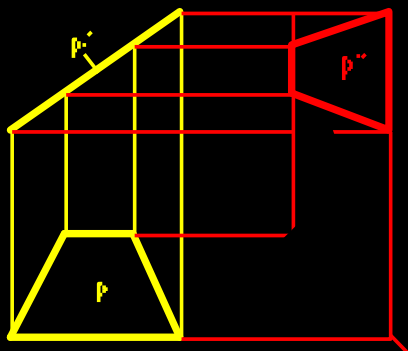


4 求作交叉直线EF、GH重影点的投影。



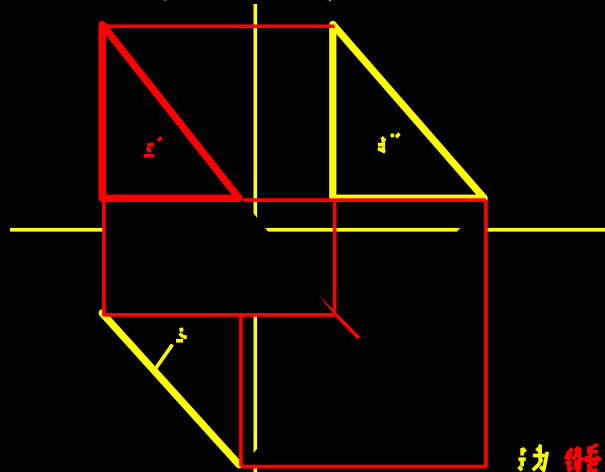
§-4 平面的投影

11 求作平面P的第三投影, 并说明其对投影面的相对位置.



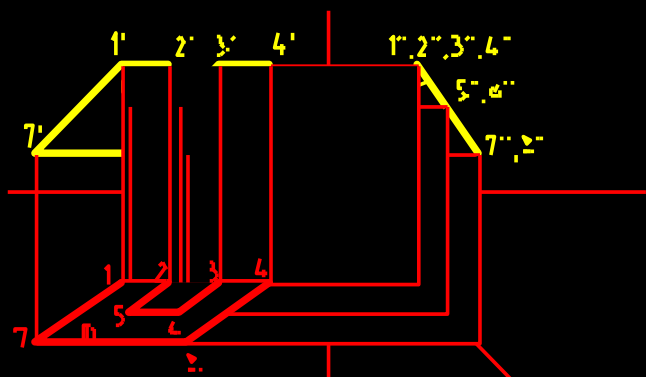
P为 正垂面.

12 求作平面S的第三投影, 并判别其对投影面的相对位置.



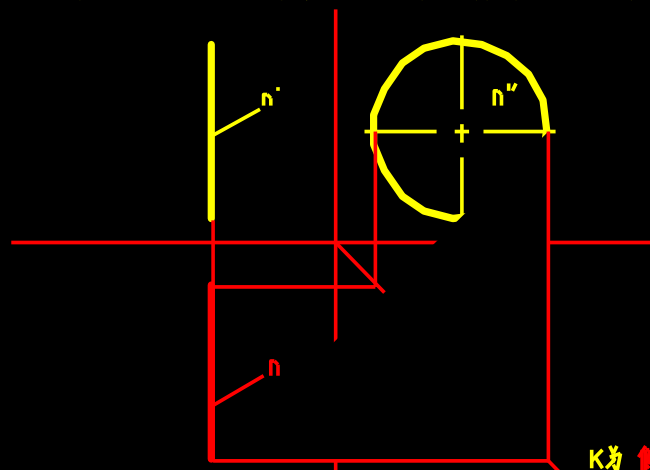
S为 侧垂面.

13 求作平面M的第三投影, 并说明其对投影面的相对位置.



M为 侧垂面.

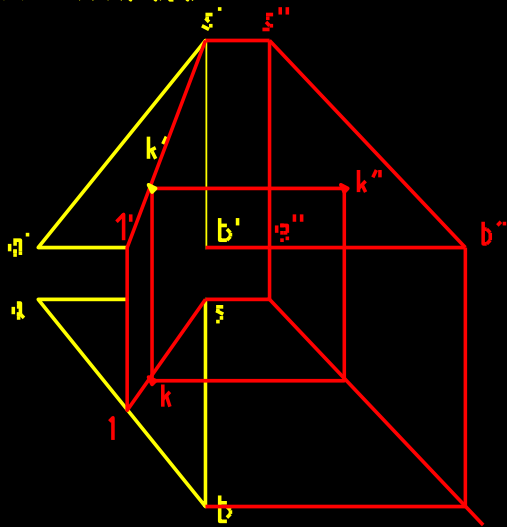
14 求作平面N的第三投影, 并判别其对投影面的相对位置.



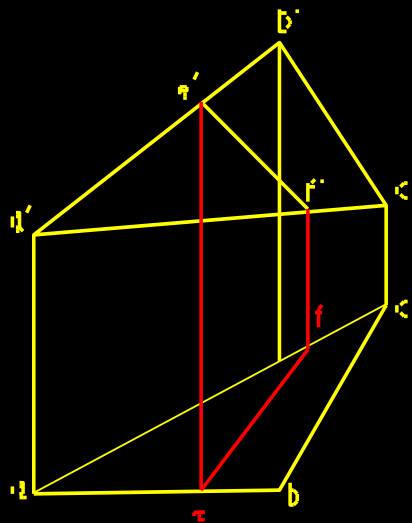
K为 侧平面.

3-5 平面上点和直线的投影

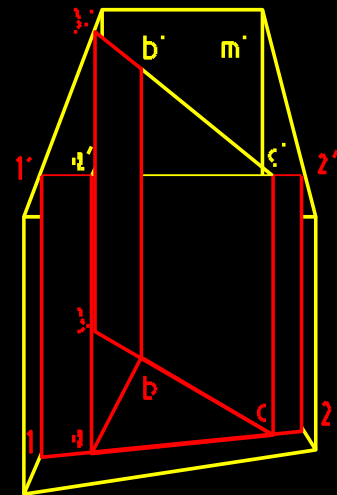
11 完成 $\triangle ABC$ 与平面的侧面投影及其上点 K 的其余投影。



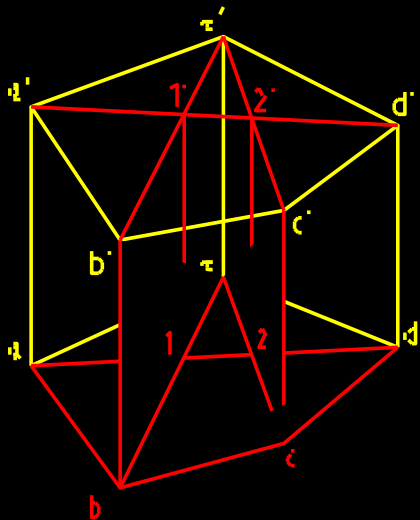
12 求作 $\triangle ABC$ 中直线 EF 的水平投影 $e'f'$ 。



13 求作 M 平面上 $\triangle ABC$ 的水平投影。



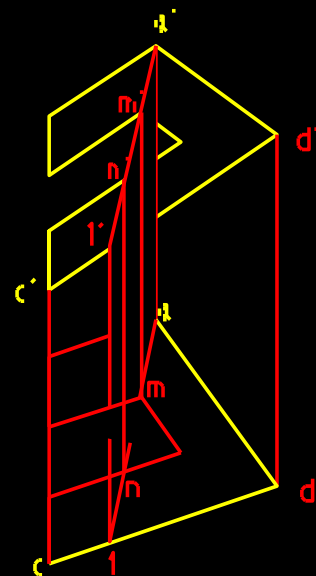
14 完成多边形 ABCDE 的水平投影。



15 完成多边形的水平投影。

作题步骤:

1. 连接 $a'm'$ 并延长得到 n' 、 $1'$;
2. 作出 l 点水平投影 l , 连接 al 作出 m 、 n ;
3. 过 l 作直线 $// cd$, 过 m 作直线 $// cd$, 过 n 作直线 $// ad$;
4. 擦除各线段的水平投影并擦除多余作图辅助线;



3-6 立体上直线和平面的投影

根据立体图，在三个视图中标出直线和平面的投影，并说明其对投影面的相对位置。

11

DE为正平线，EF为水平线。

121

GH为侧垂线，MN为侧平线。

131

R为正垂面。

141

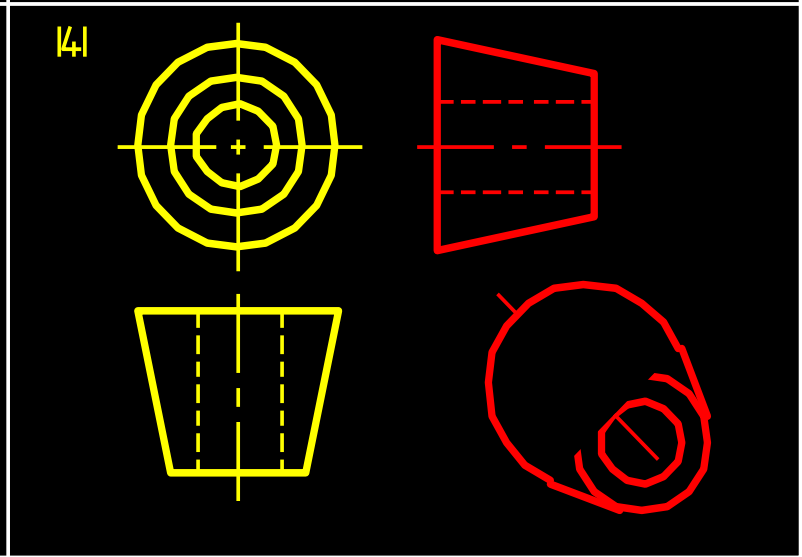
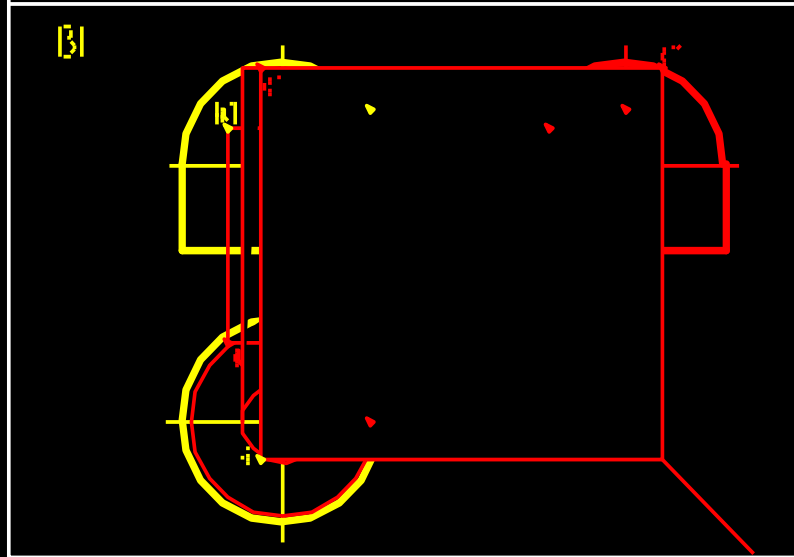
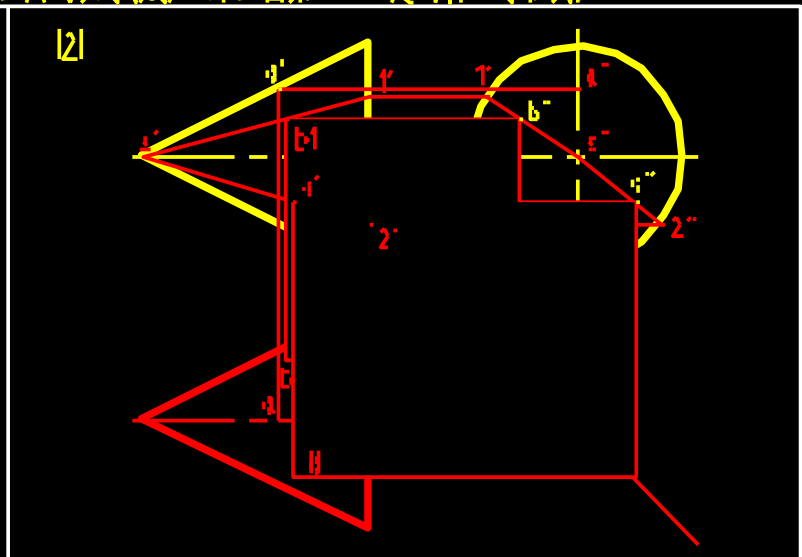
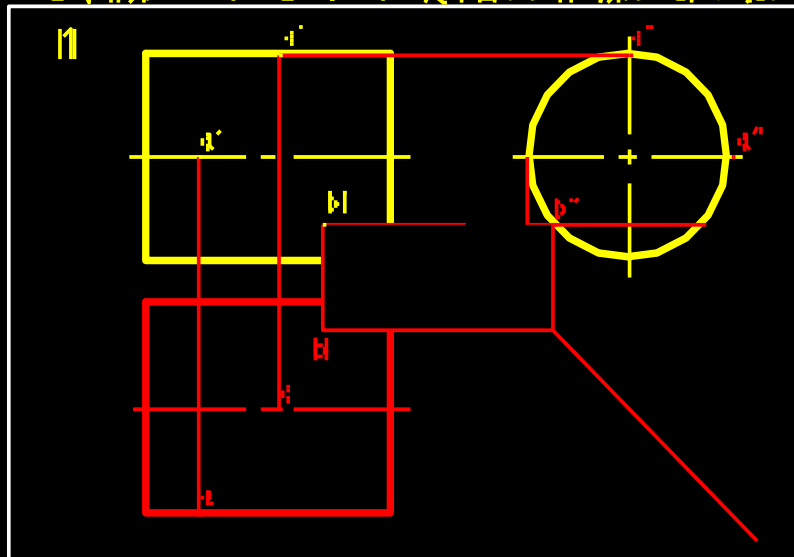
K为侧垂面。

3-7 基本体

1. 求作平面立体的第三视图及表面上点的其余投影，并画出第(3)题的正等轴测图。

<p>11</p>	<p>12</p>
<p>13</p>	<p>14</p>

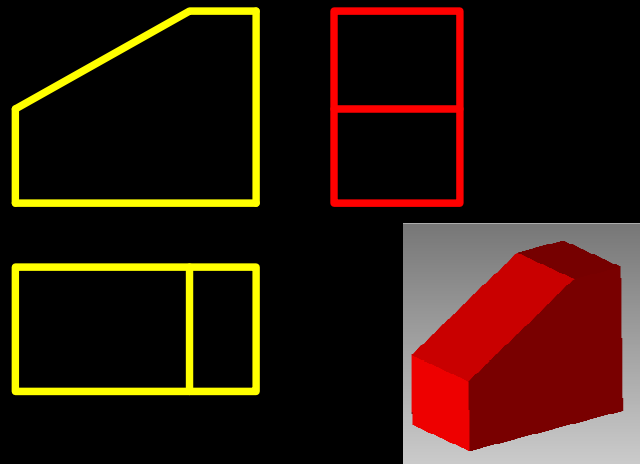
2. 求作第〈1〉、〈2〉、〈3〉题中由面立体的第三视图及表面上点的其余投影, 并画出第〈4〉题的斜二等轴测图.



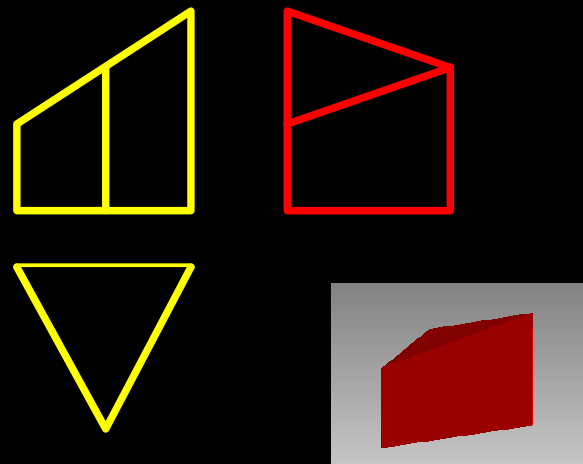
四、截切体和相贯体 4-1 平面立体截切

画出被截切平面立体的第三视图。

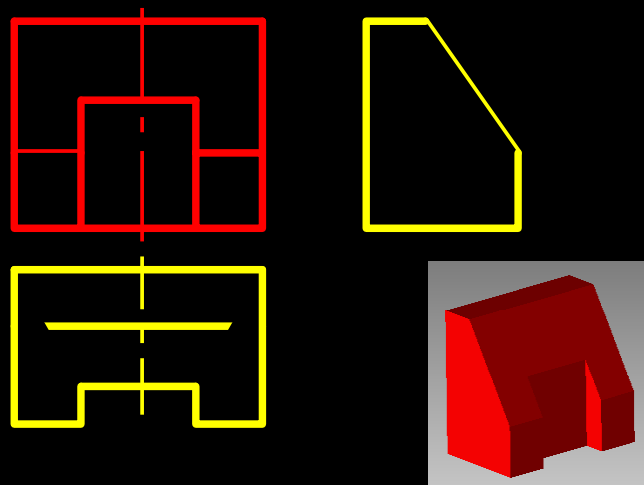
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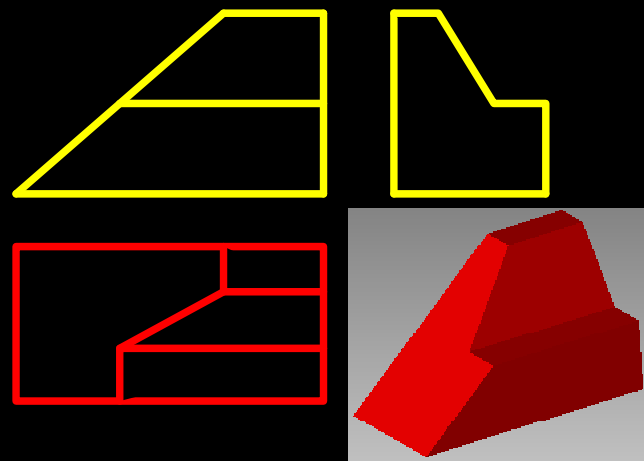
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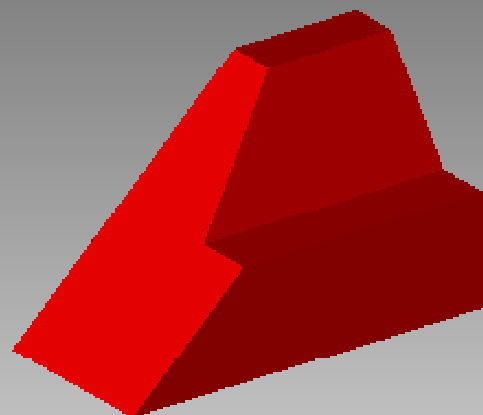
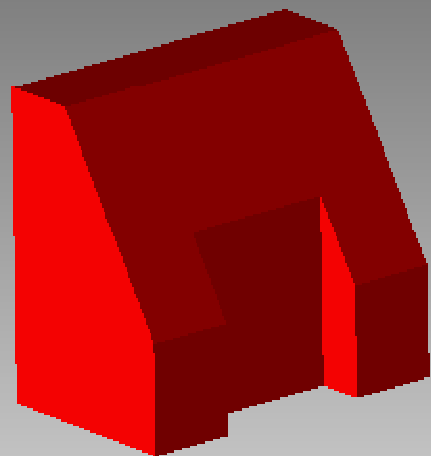
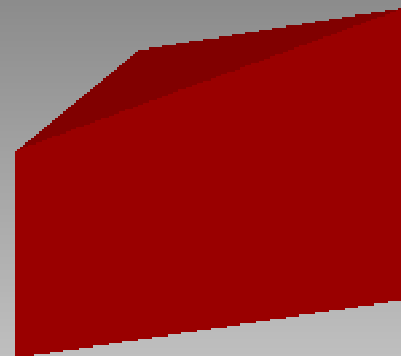
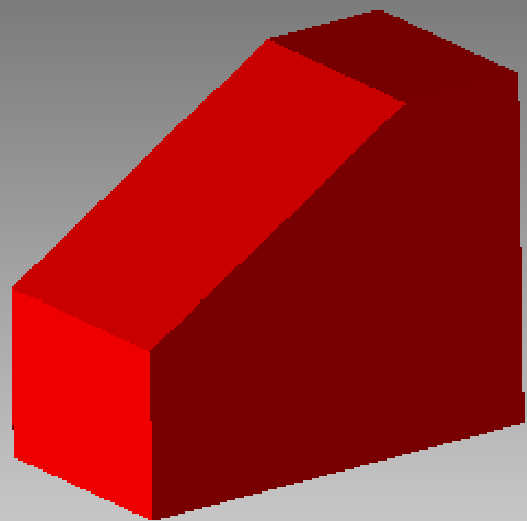


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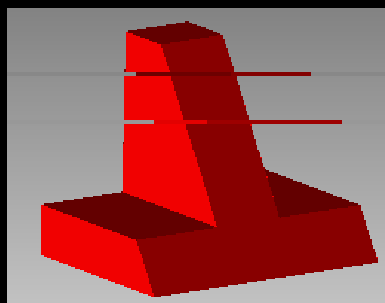
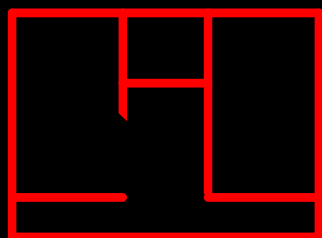
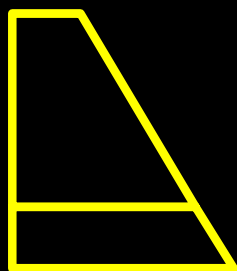
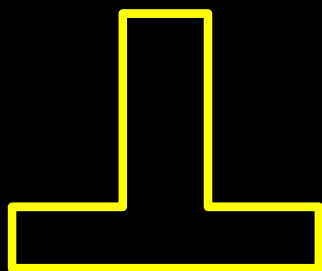
14



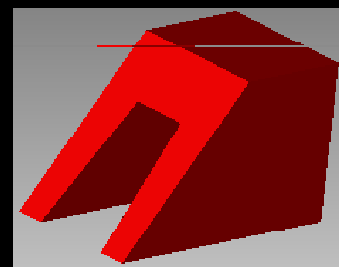
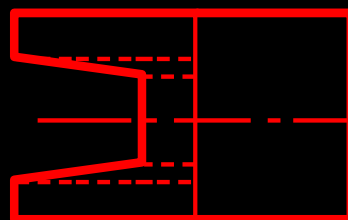
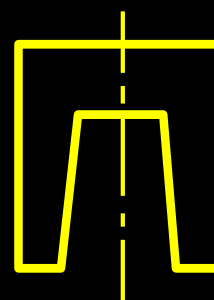
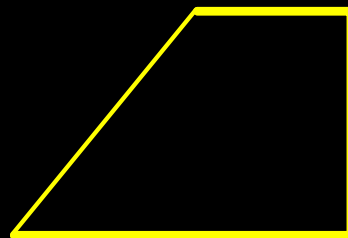


画出被截切平面立体的第三视图。

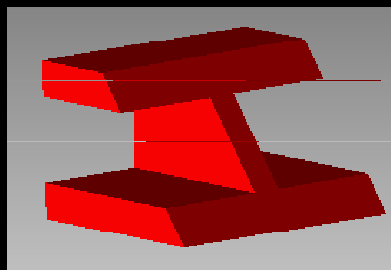
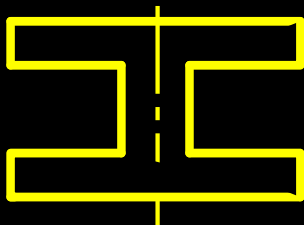
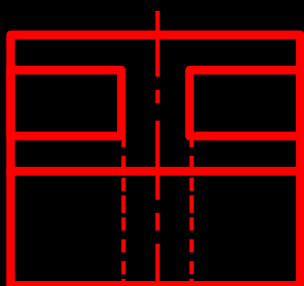
151



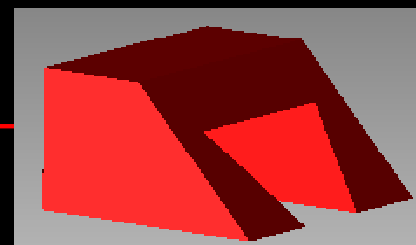
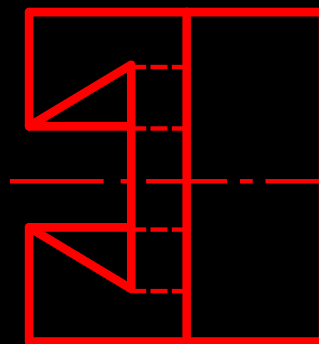
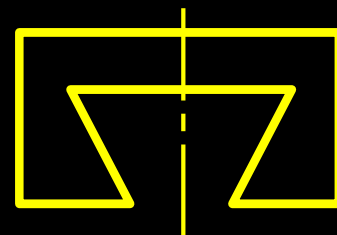
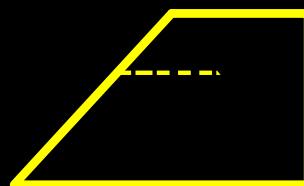
154

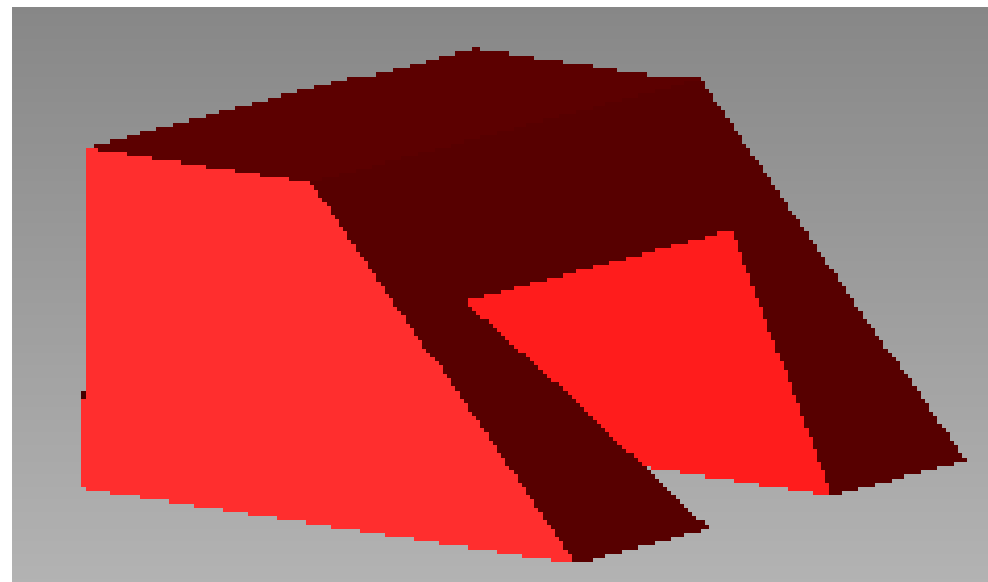
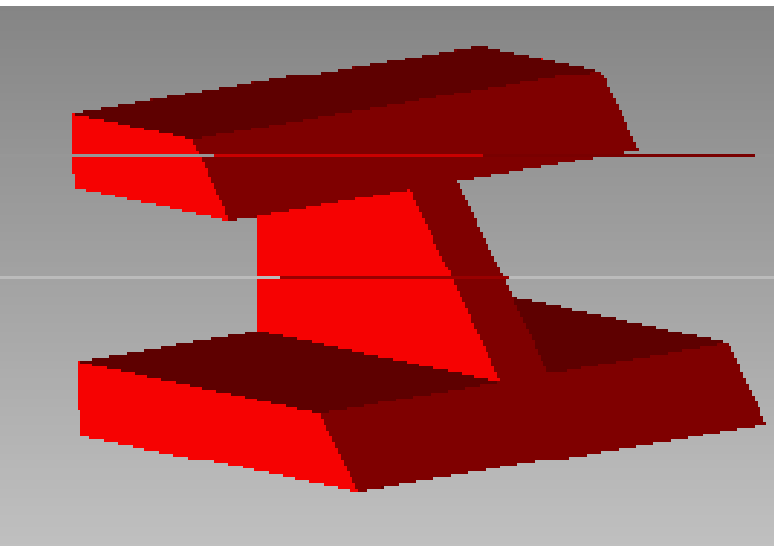
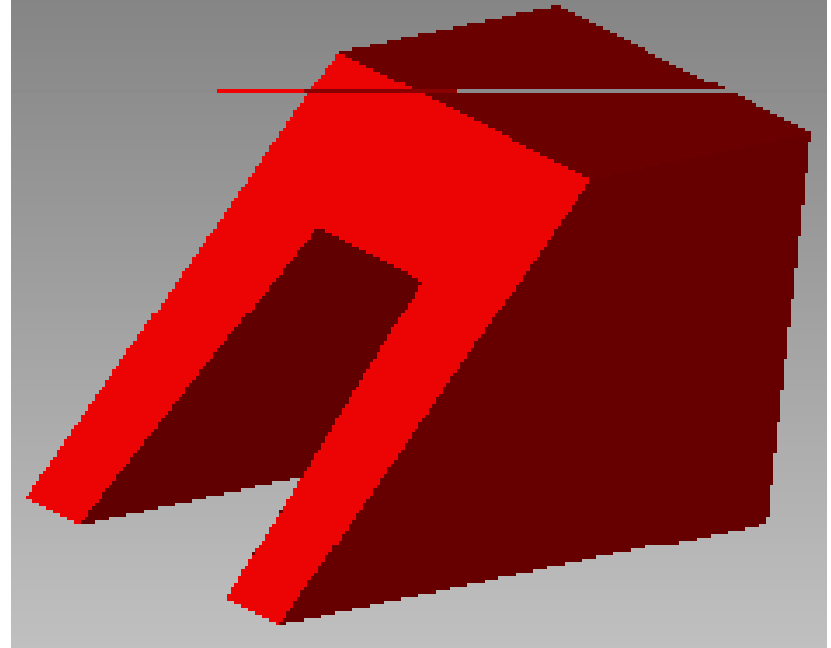
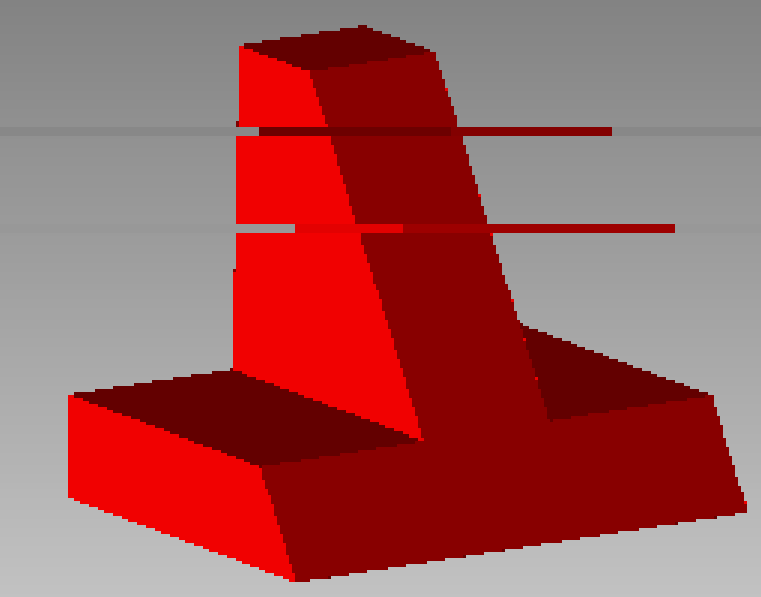


171



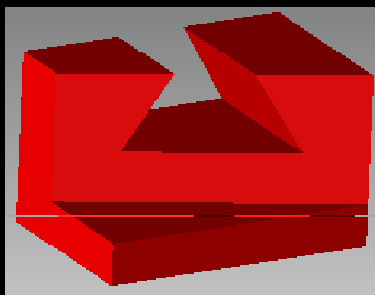
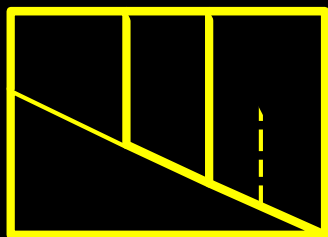
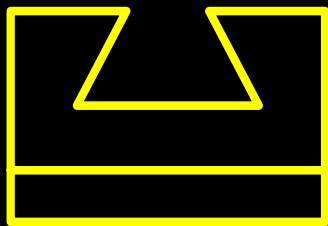
174



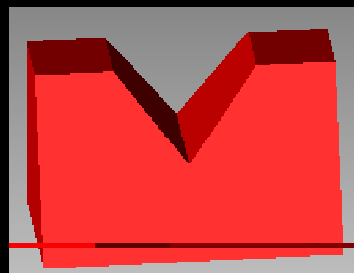
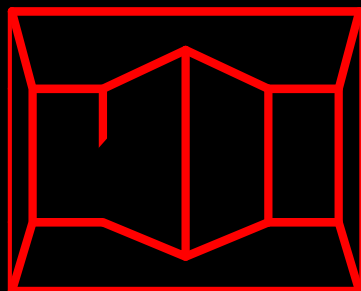
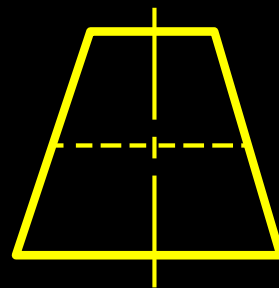
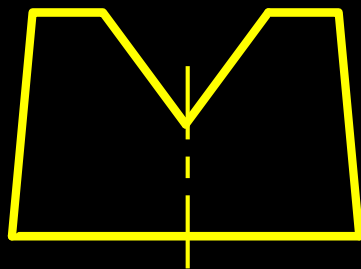


画出被截切平面立体的第三视图。

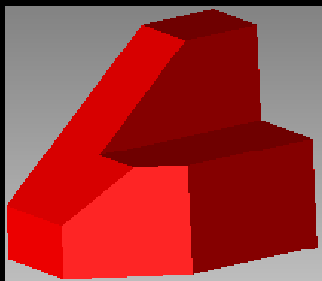
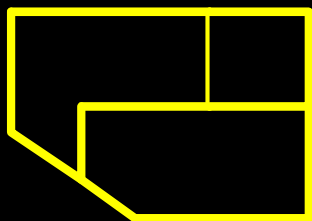
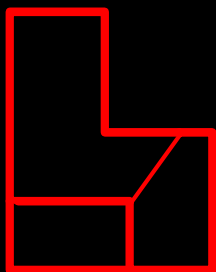
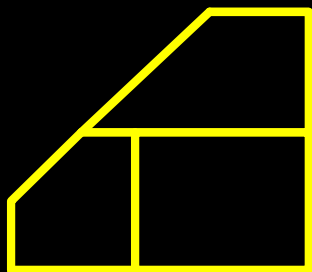
|7|



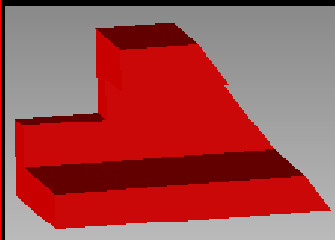
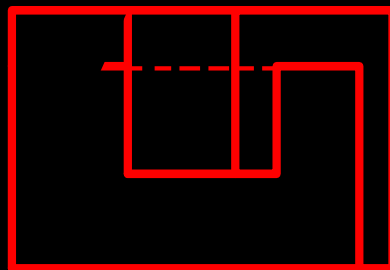
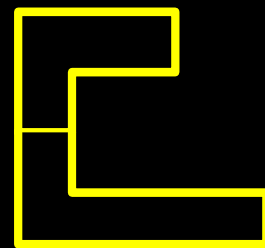
|10|

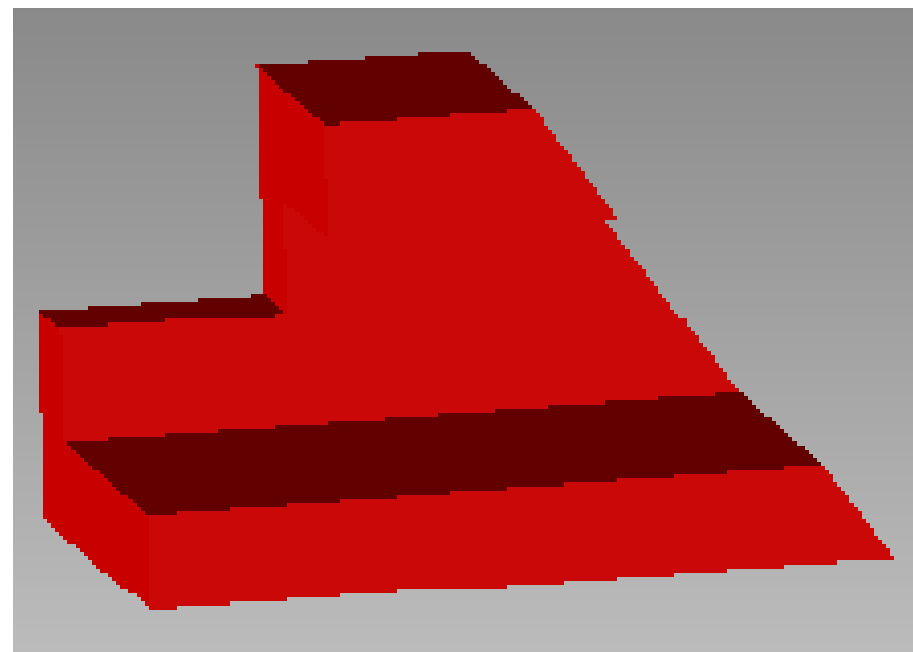
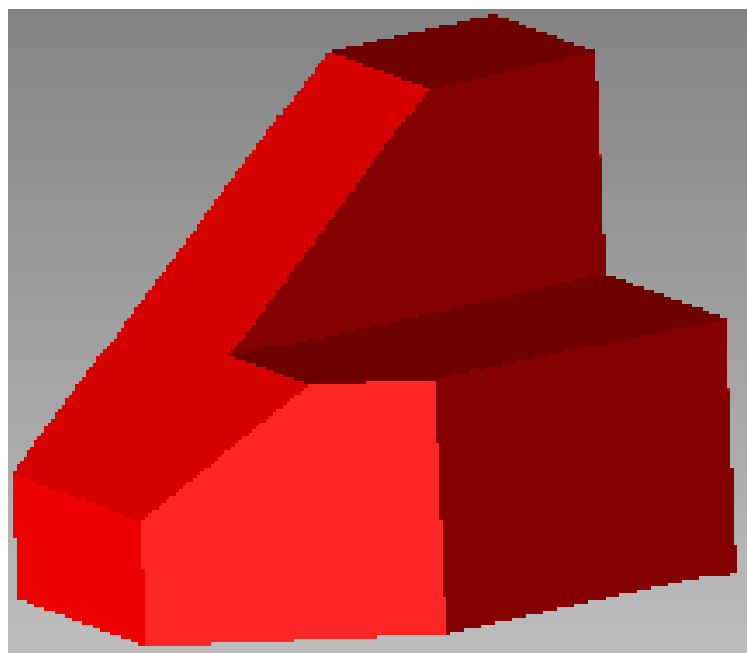
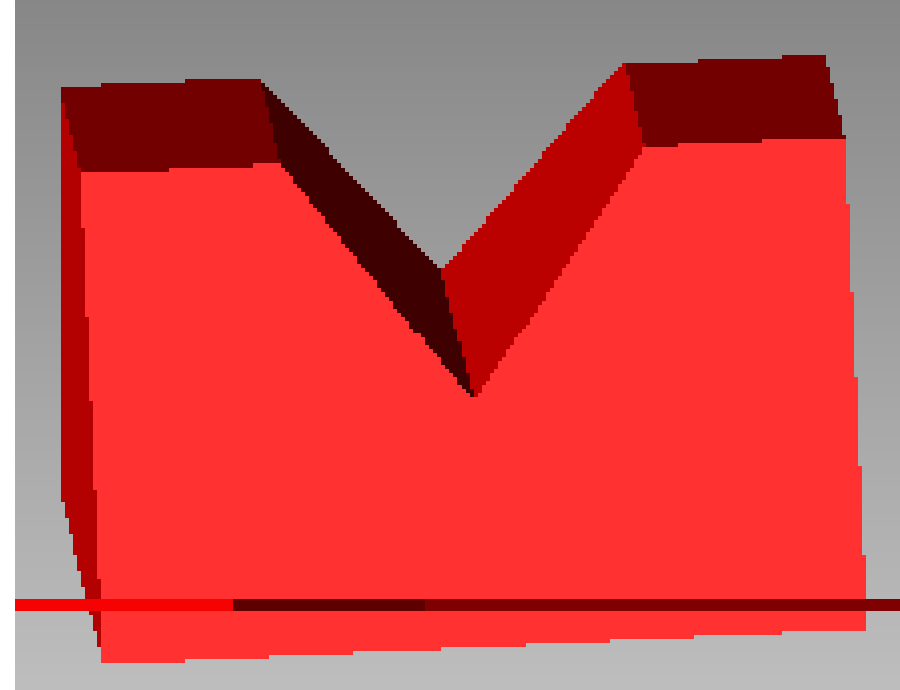
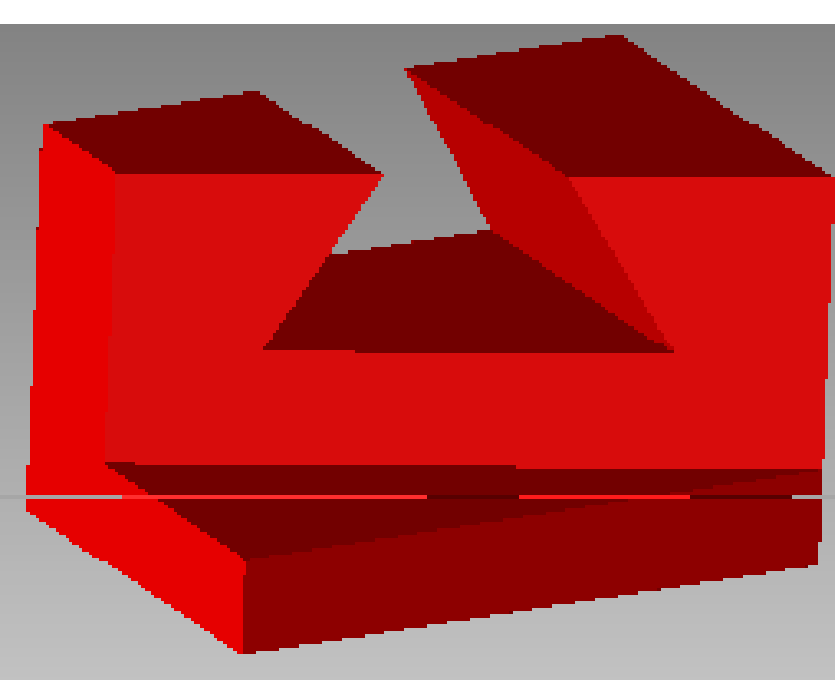


|11|

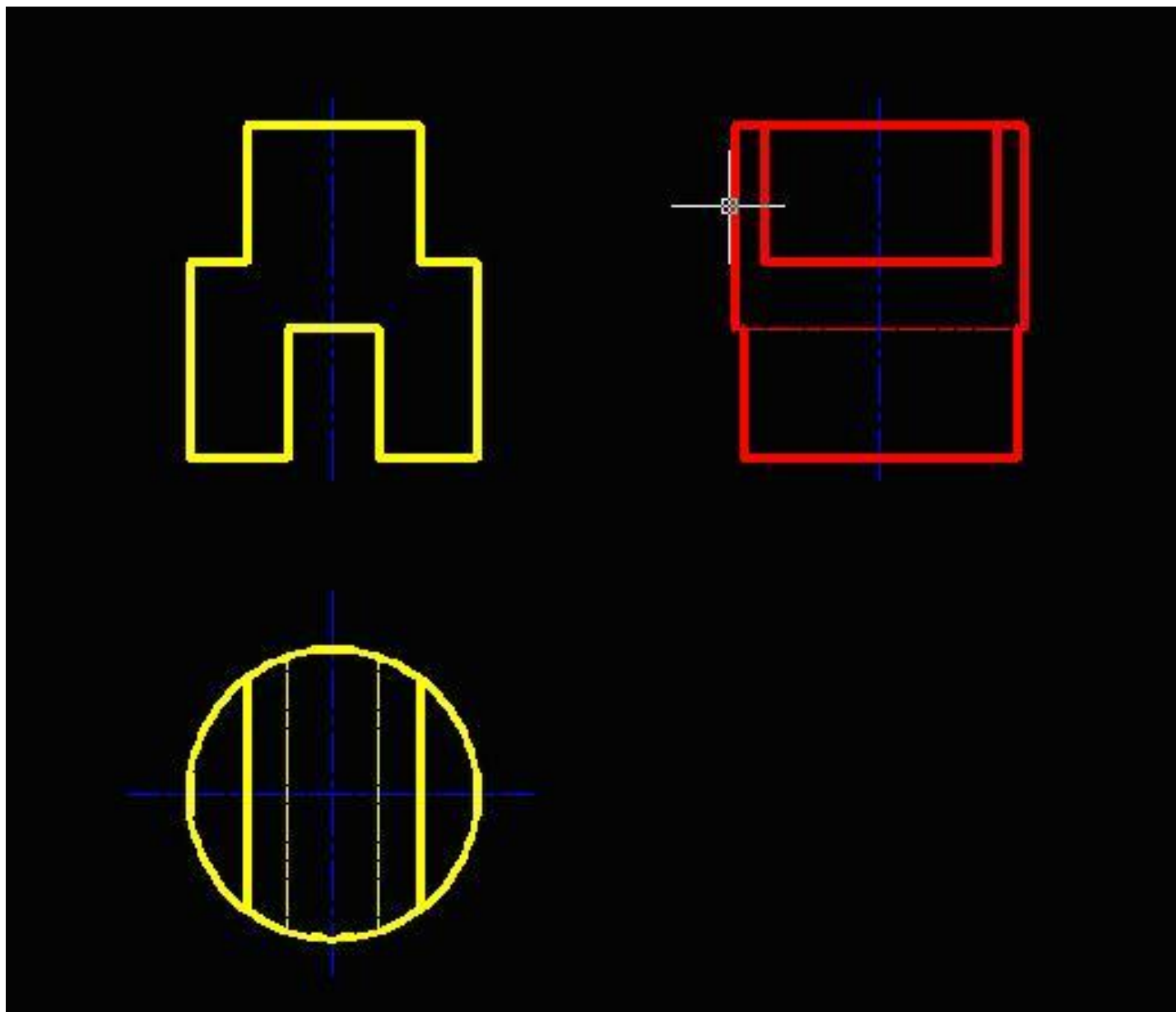


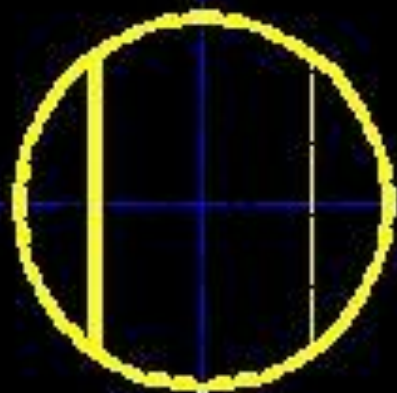
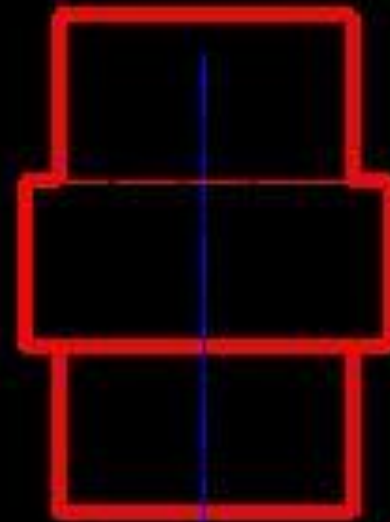
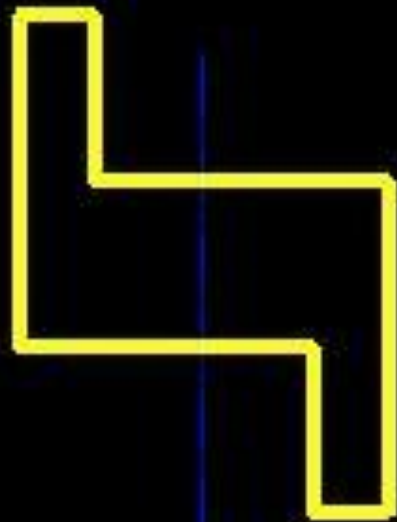
|12|

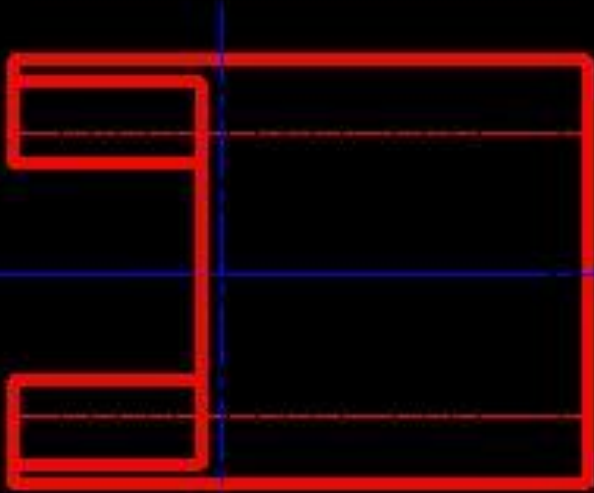
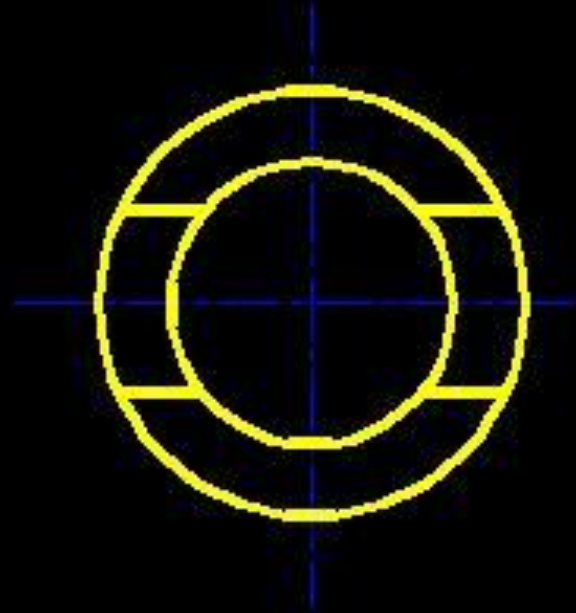
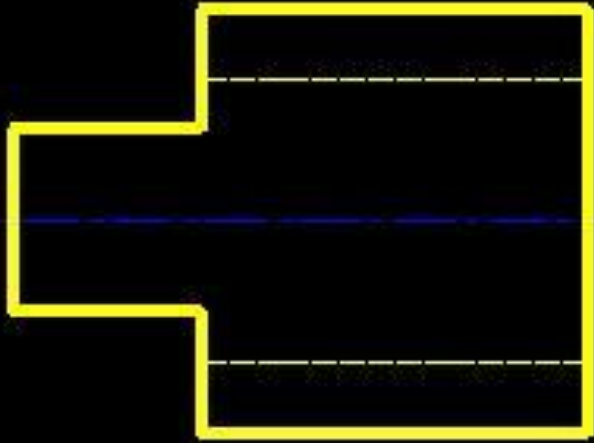


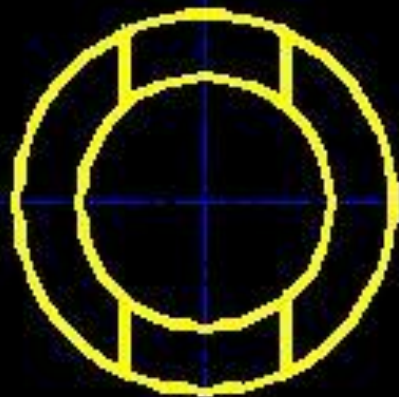
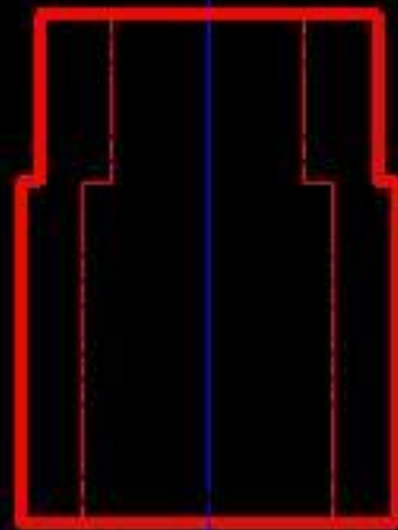
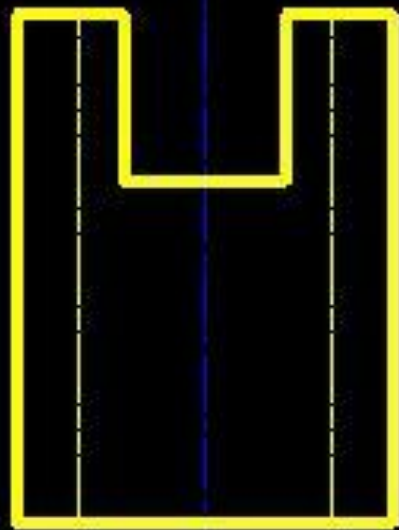


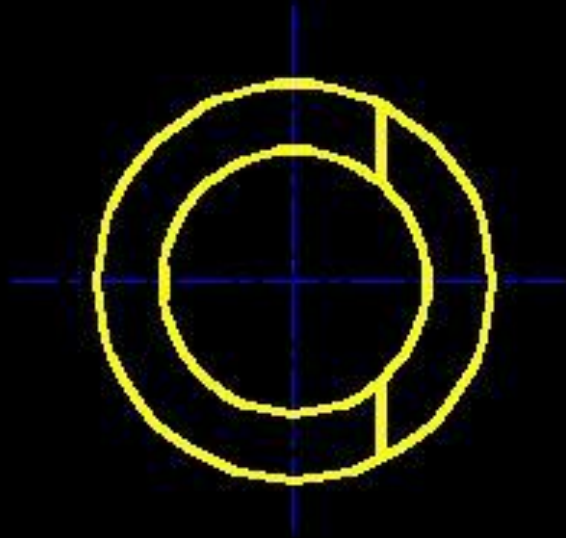
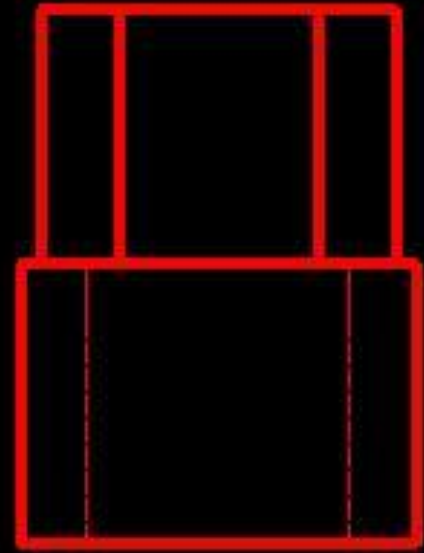
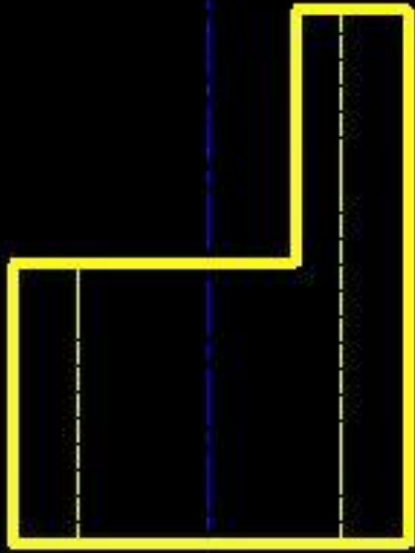
完成下列三视图

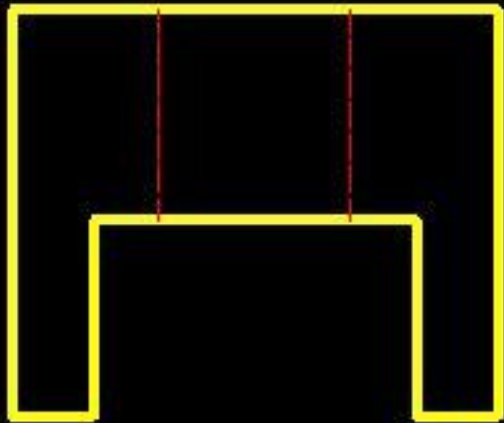
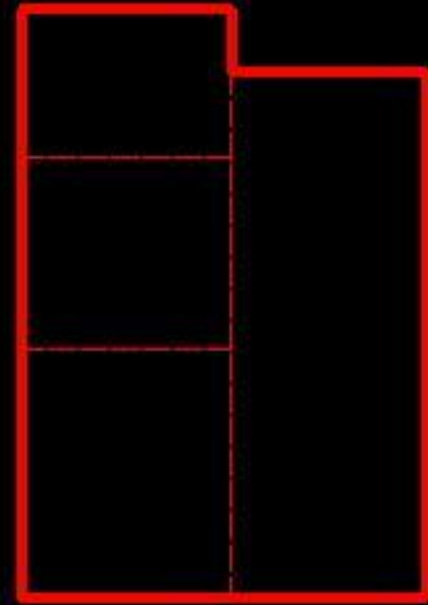
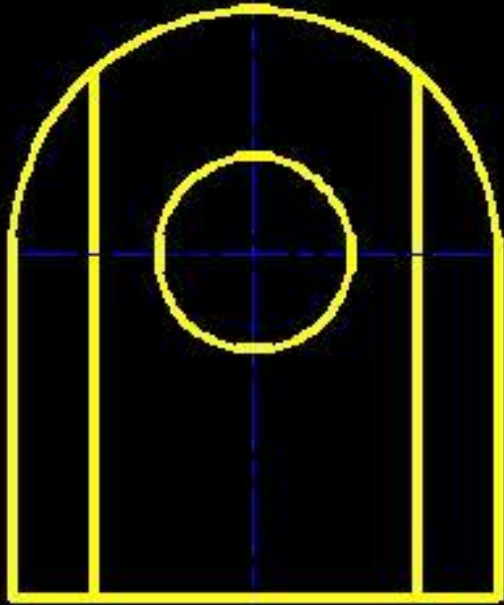






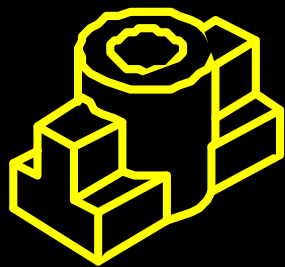
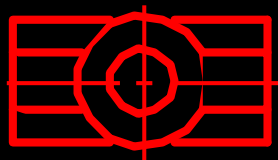
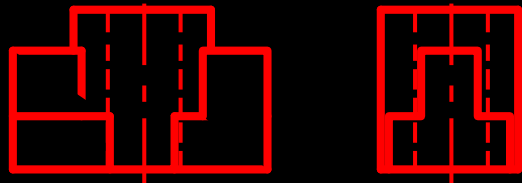




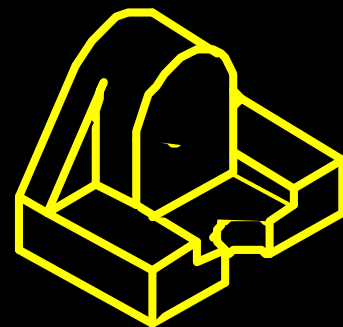
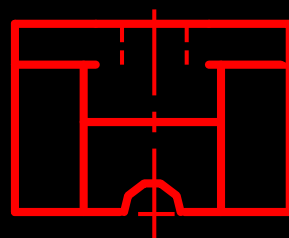
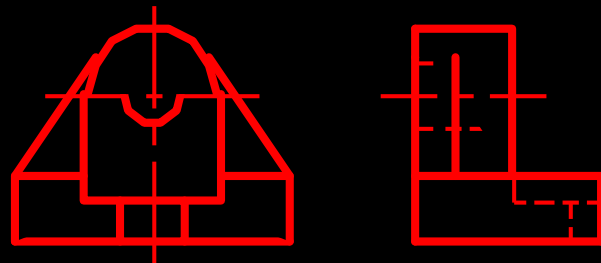


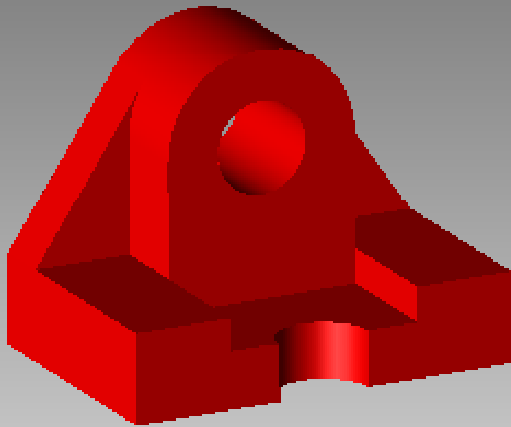
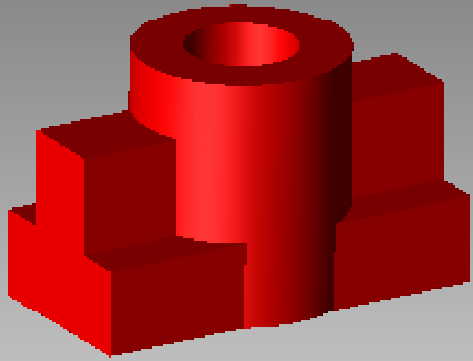
五、组合体 5-1 组合体投影
根据立体图，画出其三面视图，尺寸从图中量取。

111



121

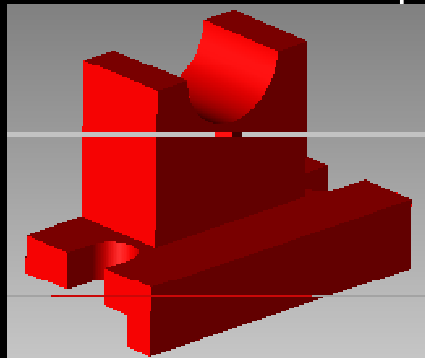
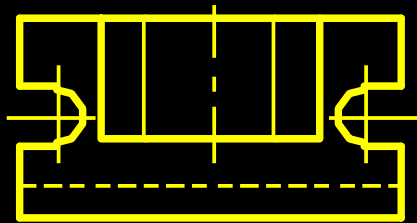
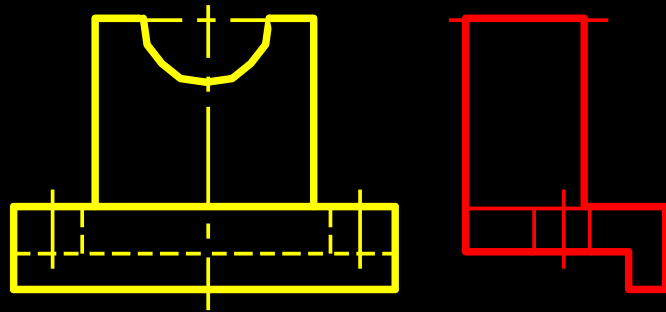




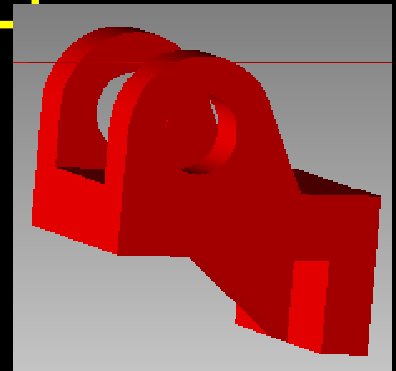
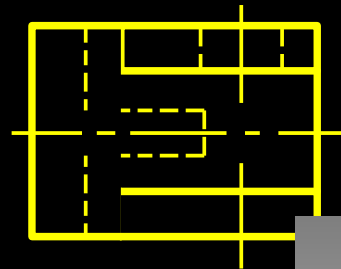
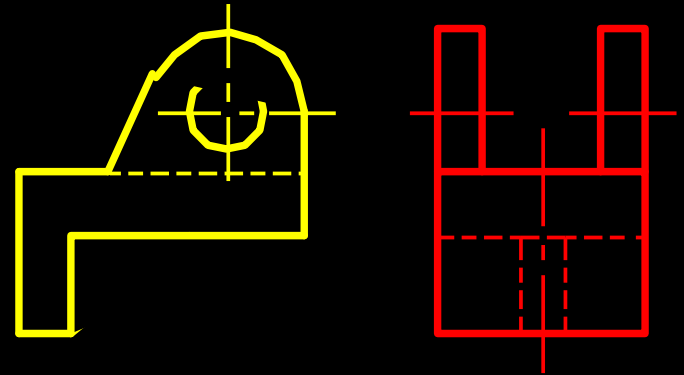
5-2 组合体三视图

根据两视图，画出其第三视图。

111

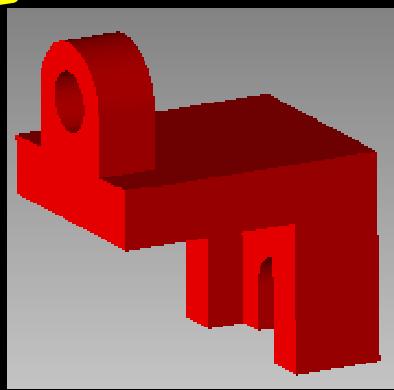
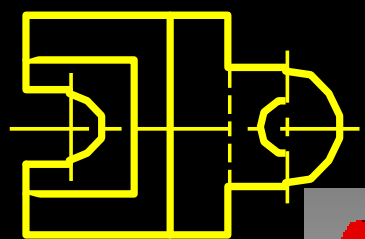
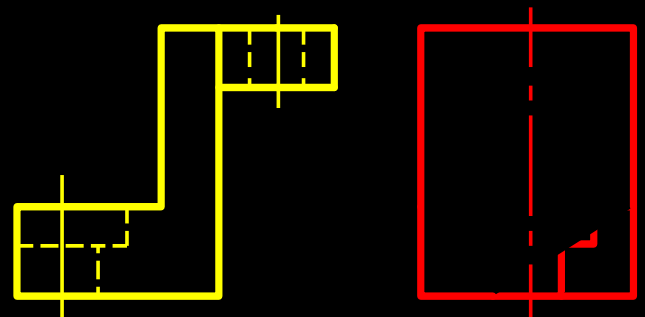


121

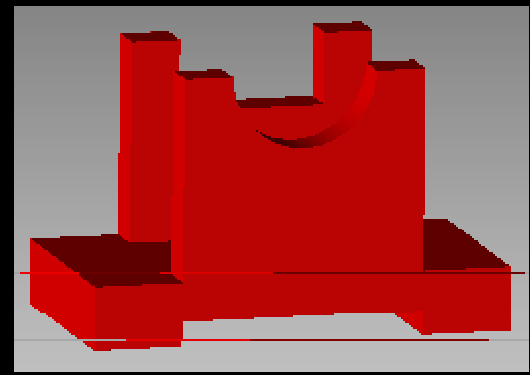
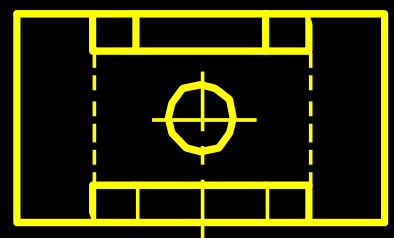
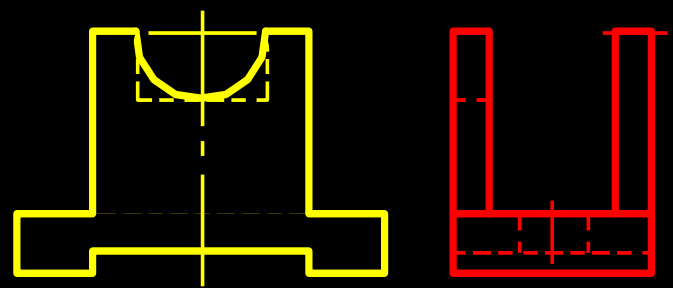


根据两视图，画出其第三视图。

131

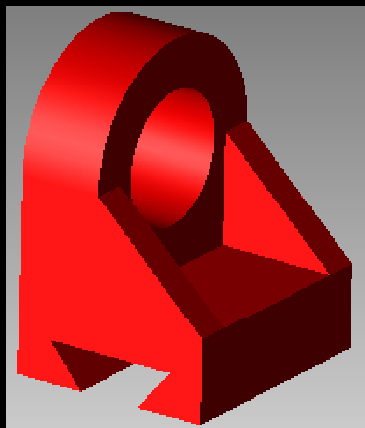
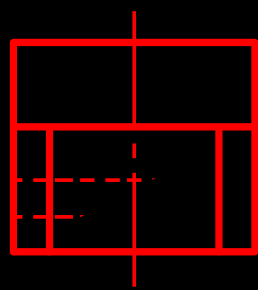
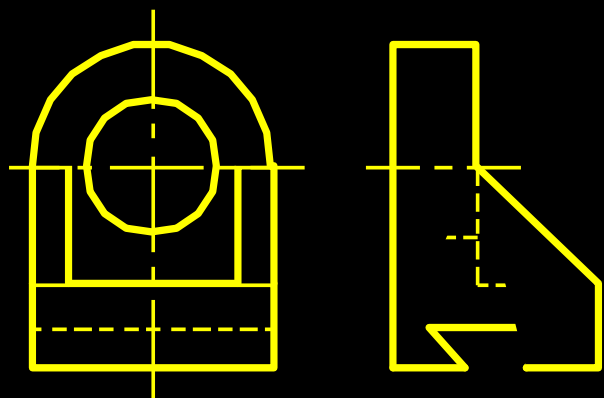


141

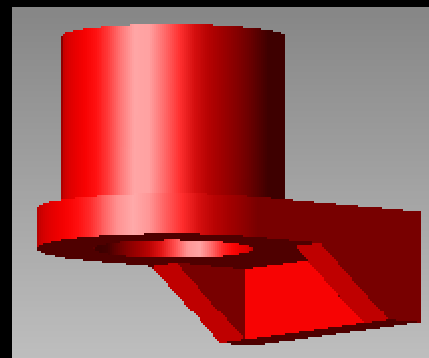
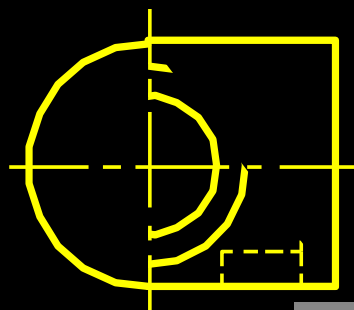
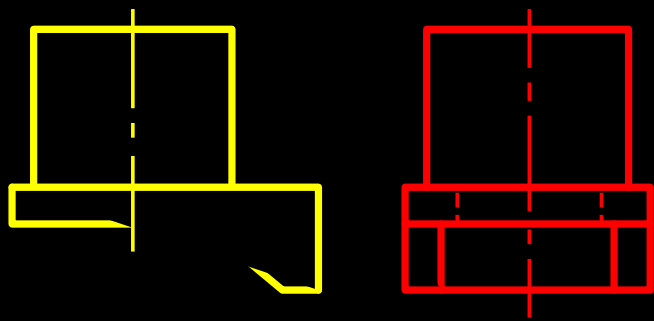


根据两视图，画出其第三视图。

151

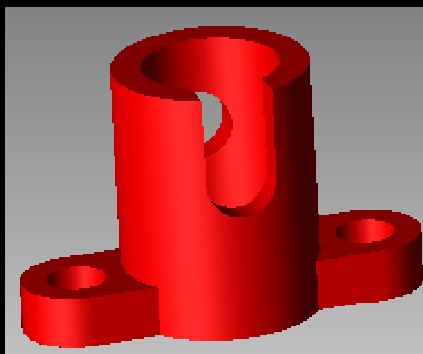
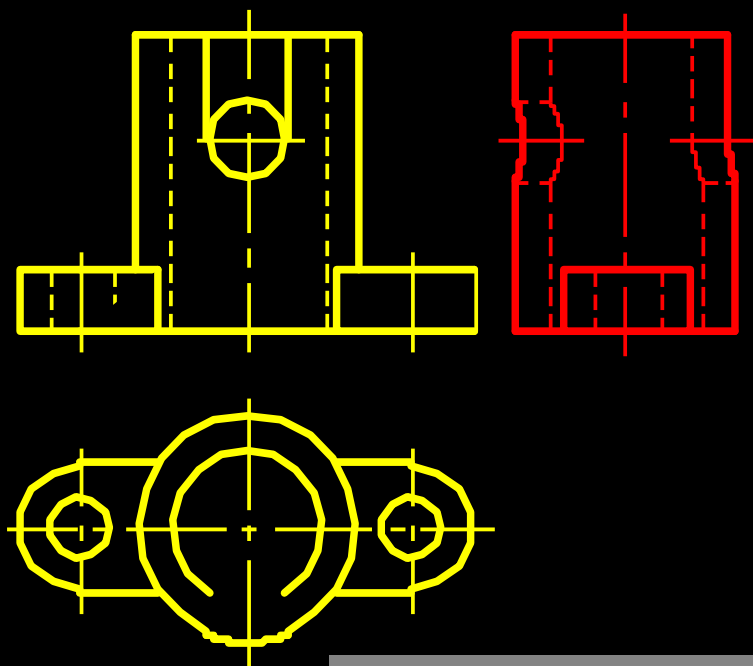


151

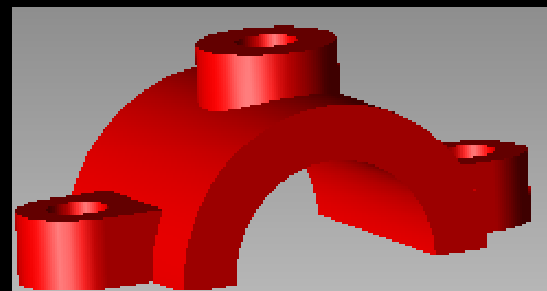
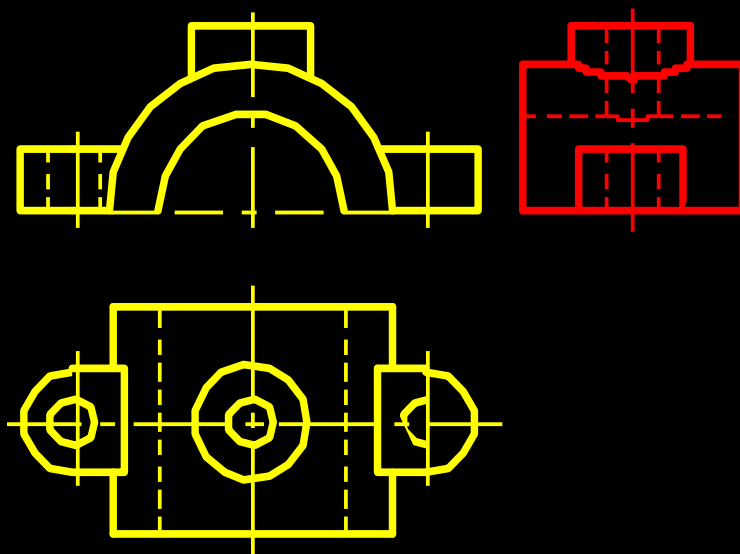


根据两视图，画出其第三视图。

17

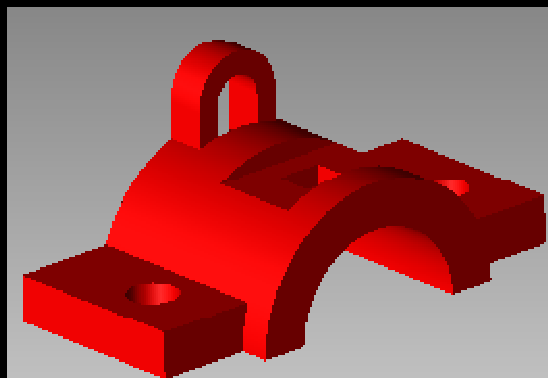
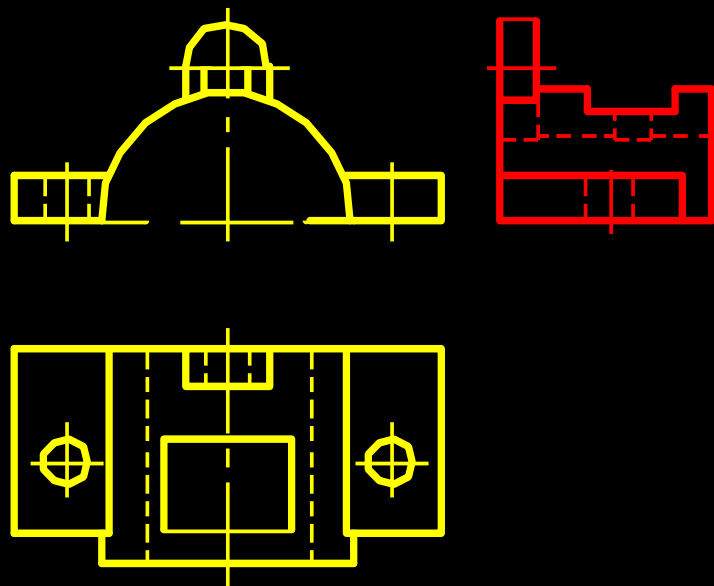


18

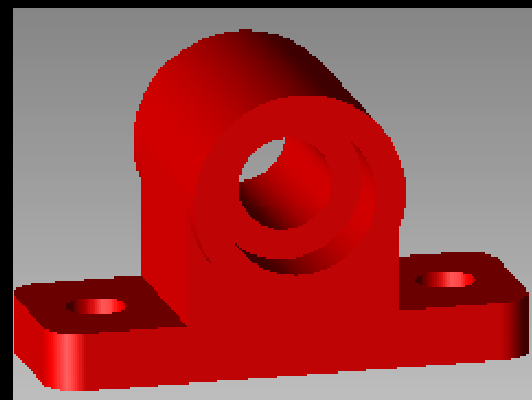
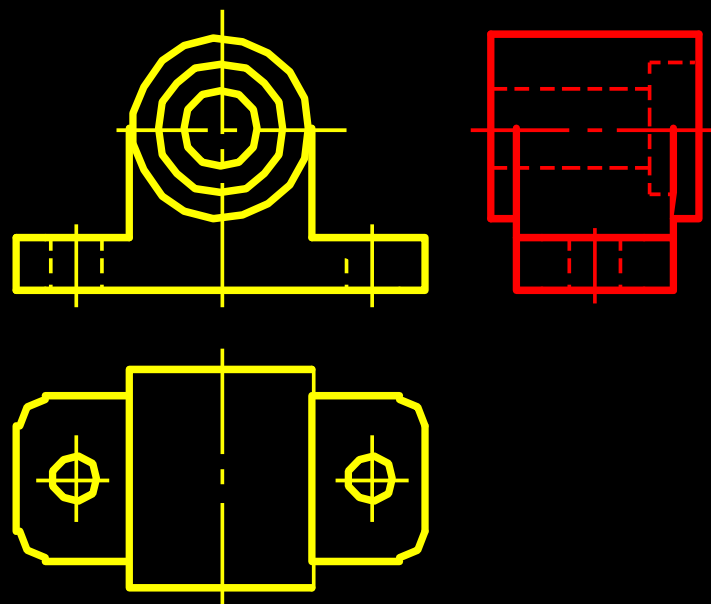


根据两视图，画出其第三视图。

161

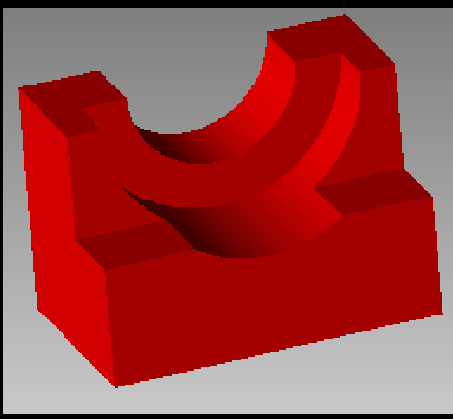
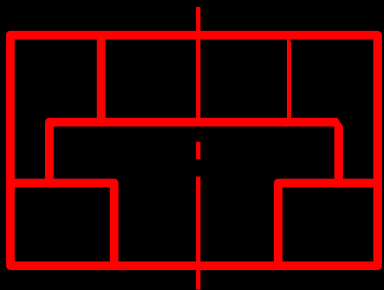
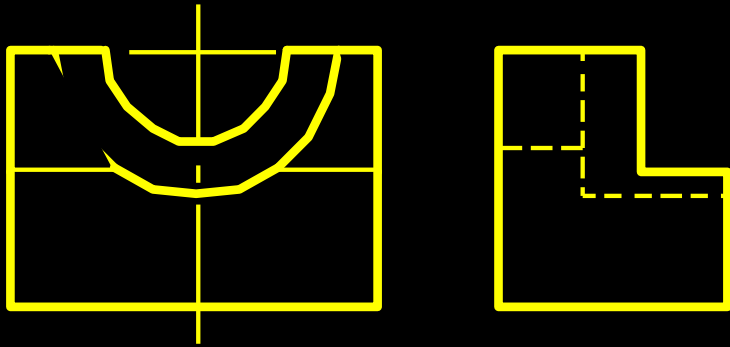


1101

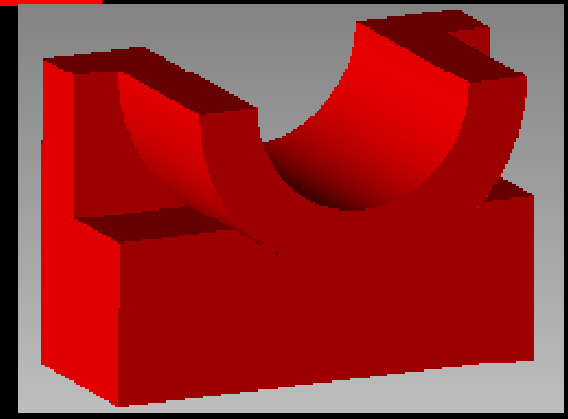
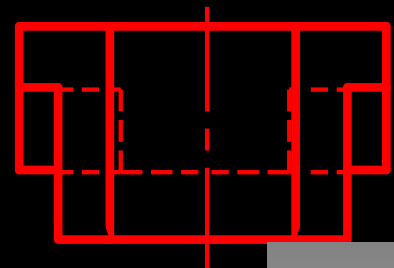
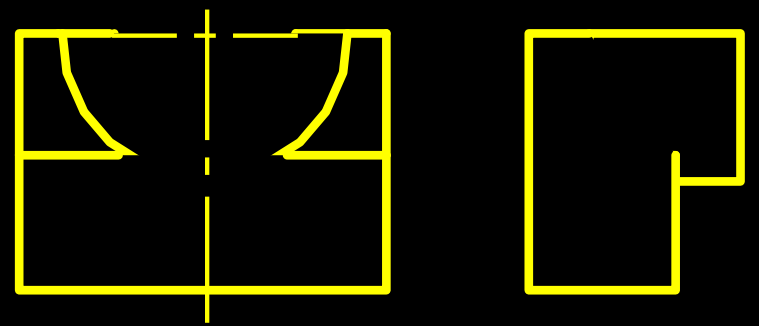


根据两视图，画出其第三视图。

1111

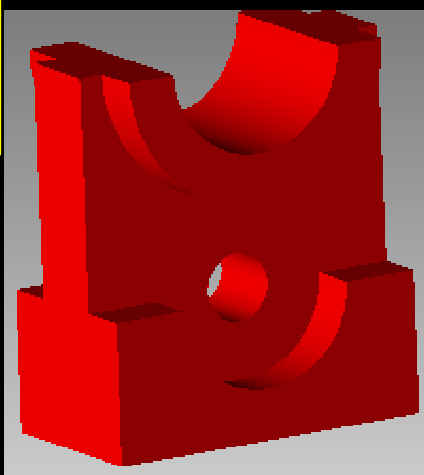
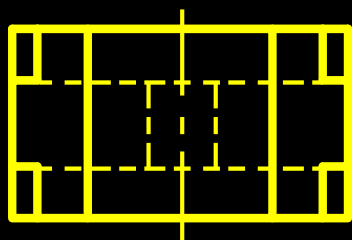
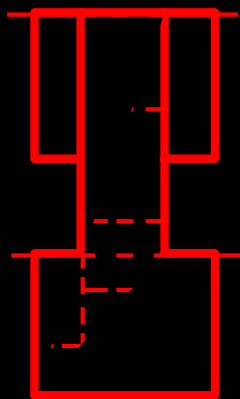
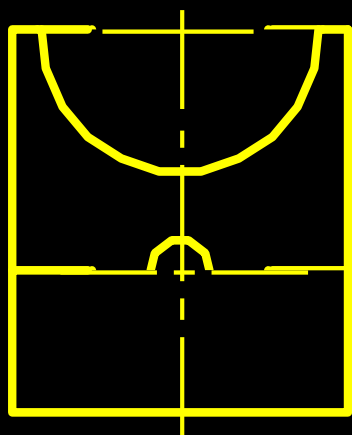


1121

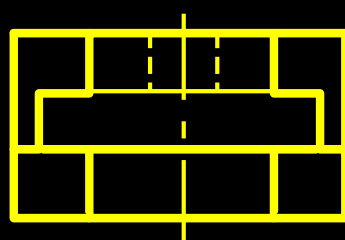
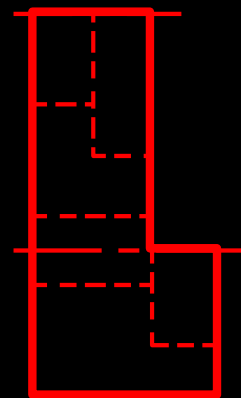
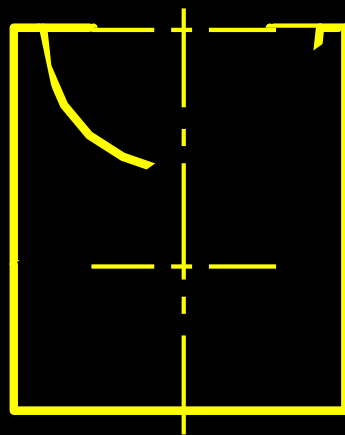


根据两视图，画出其第三视图。

113

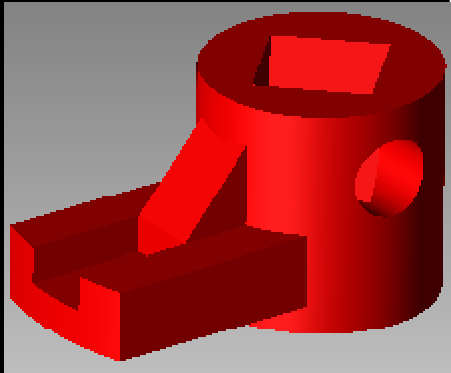
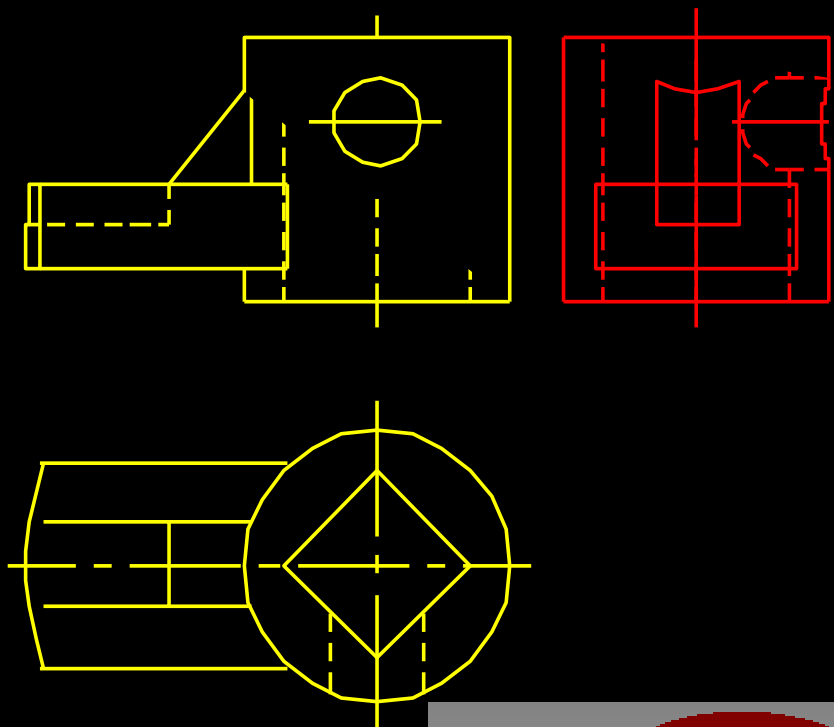


114

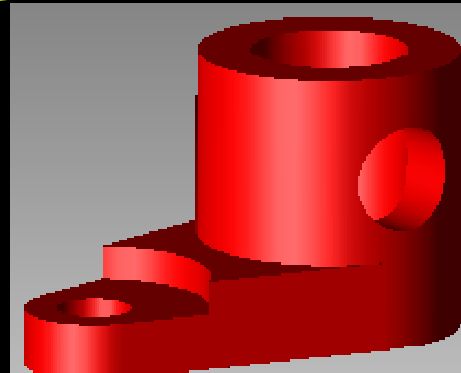
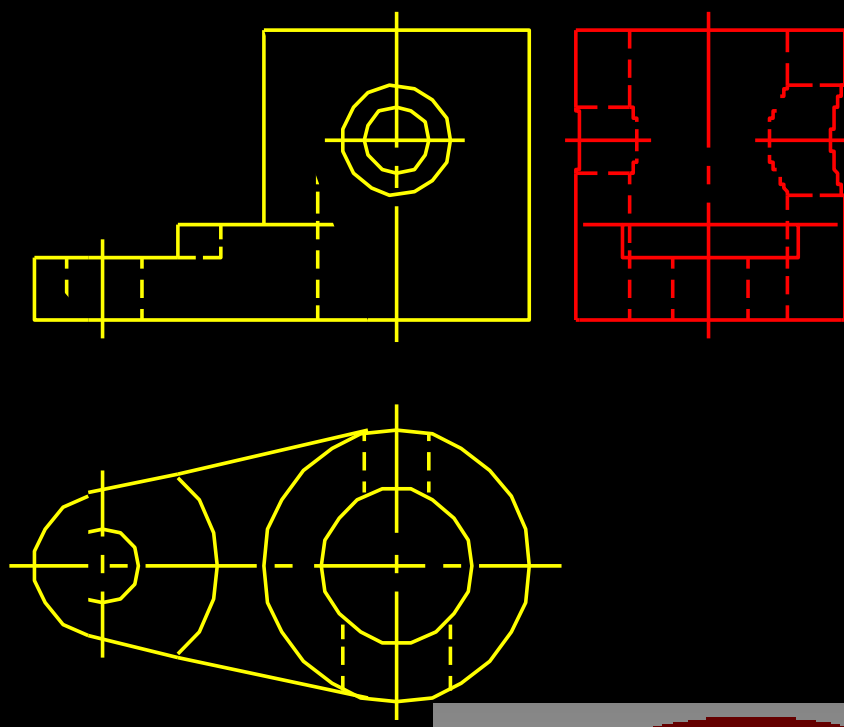


根据两视图，画出其第三视图。

115



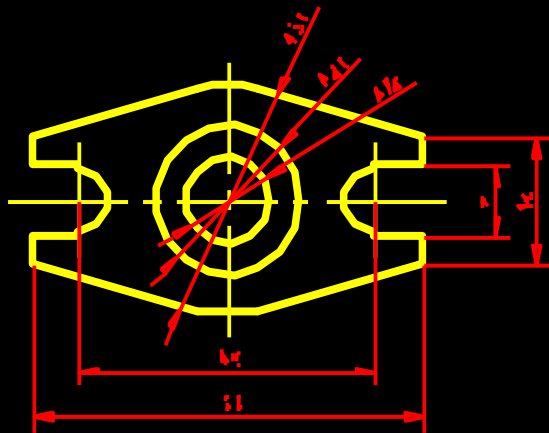
116



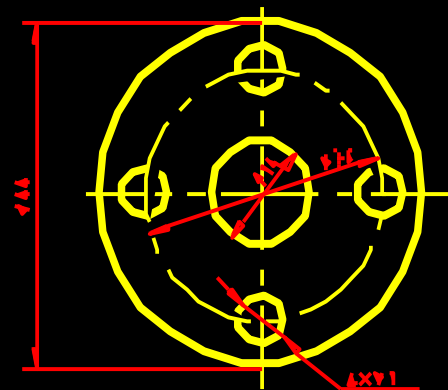
5-3 尺寸标注

1. 标注下列平面图形的尺寸 (从图中直接量取) .

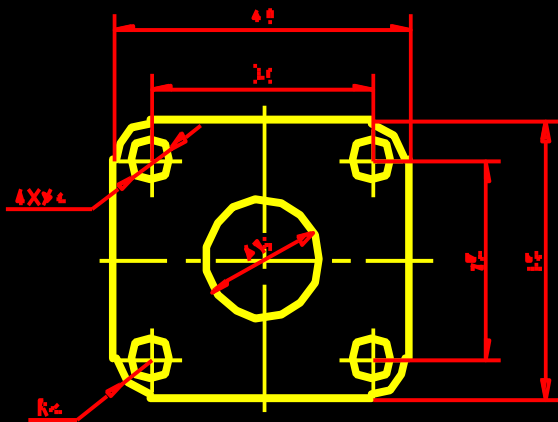
11



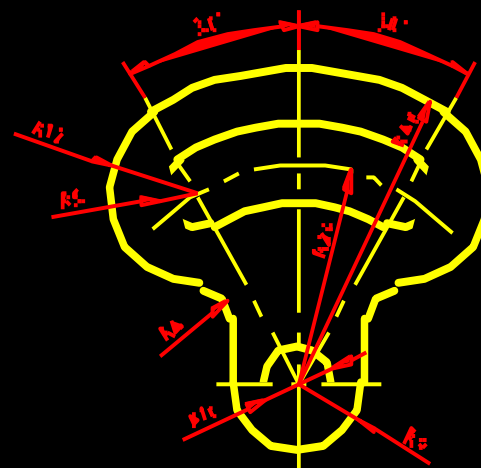
12



13

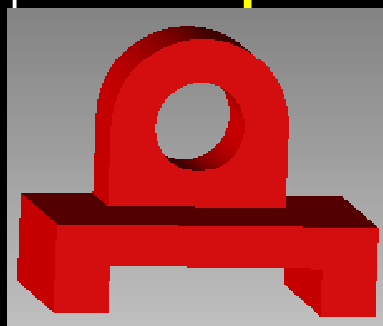
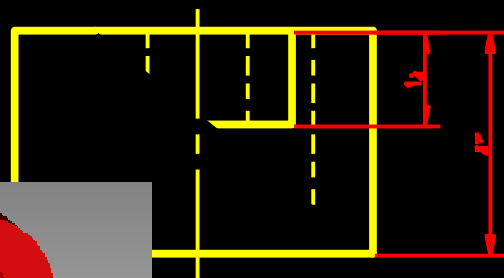
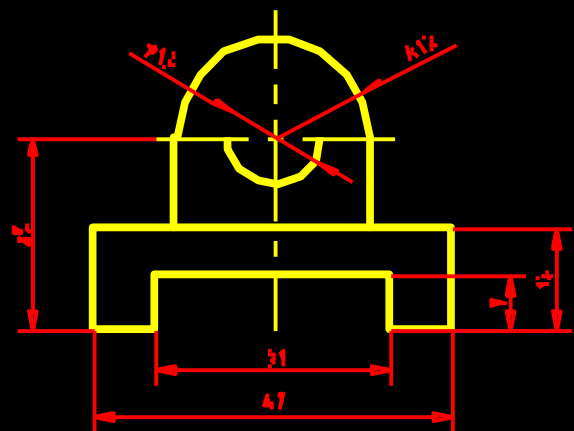


14

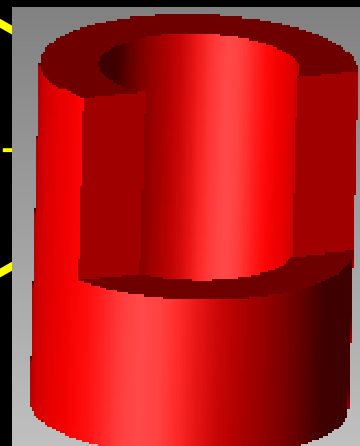
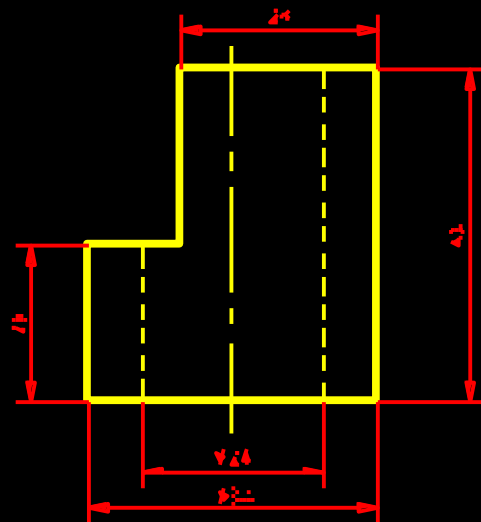


2. 标注下列形体的尺寸 (从图中直接量取) .

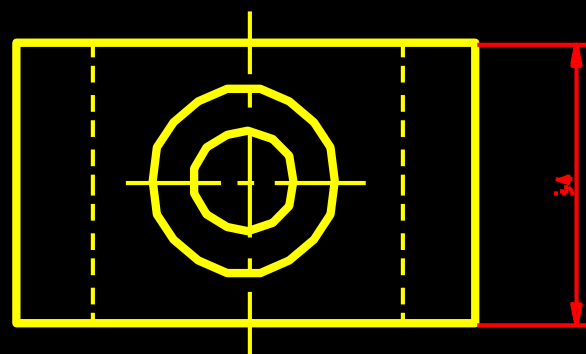
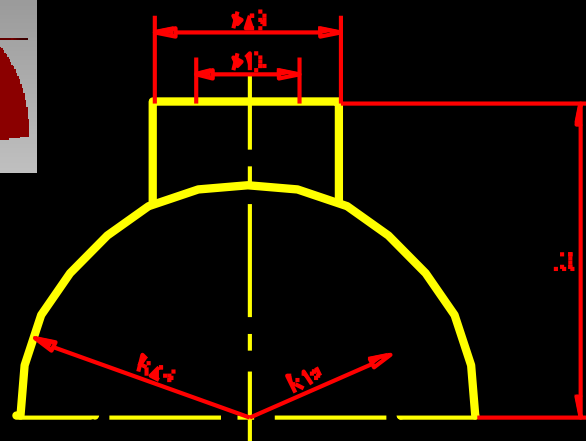
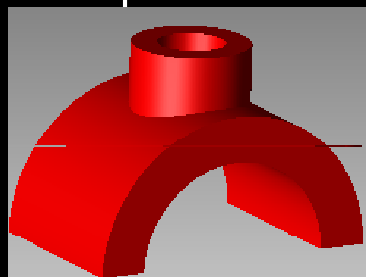
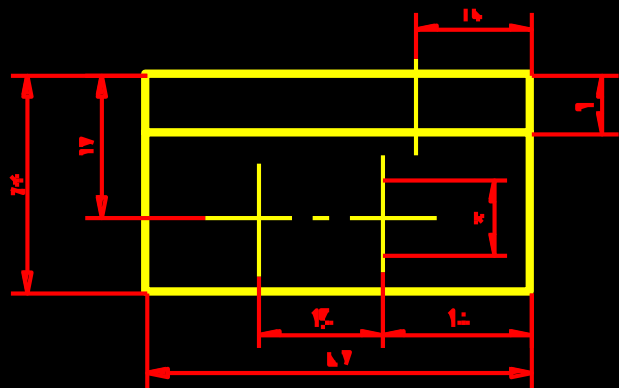
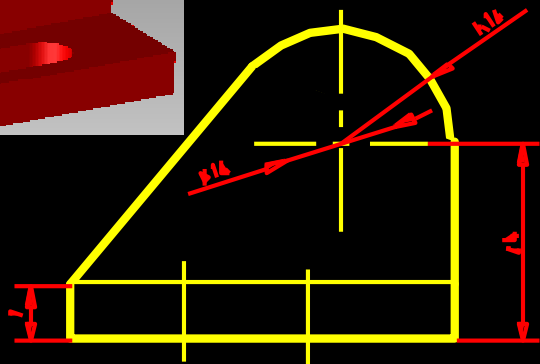
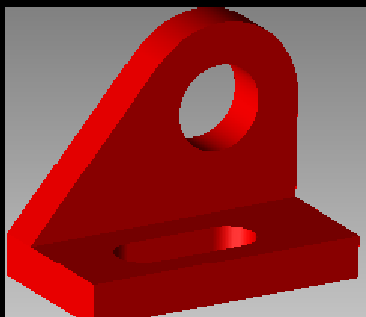
11



121

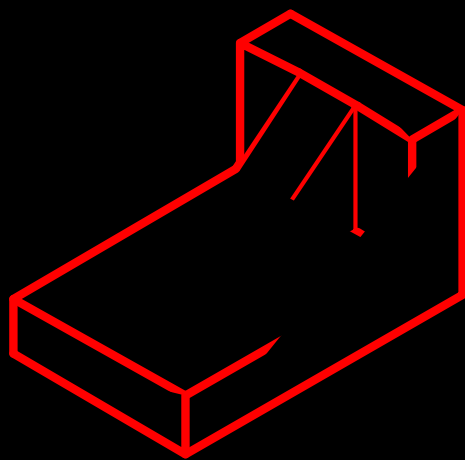
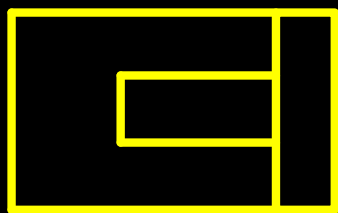
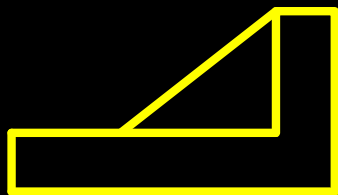


标注下列形体的尺寸〈从图中直接量取〉。

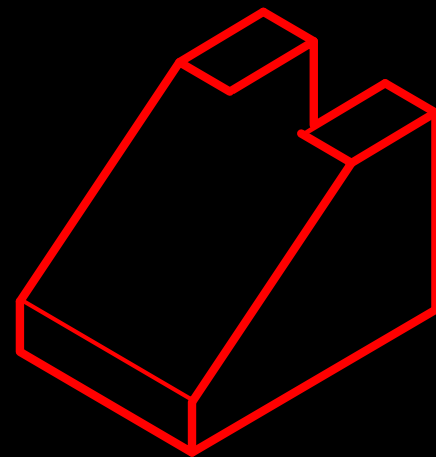
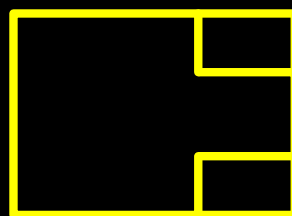
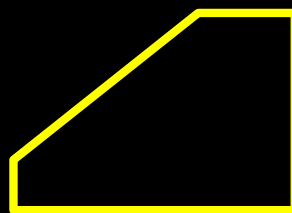


1. 根据已知视图，画出其正等轴测图。

11

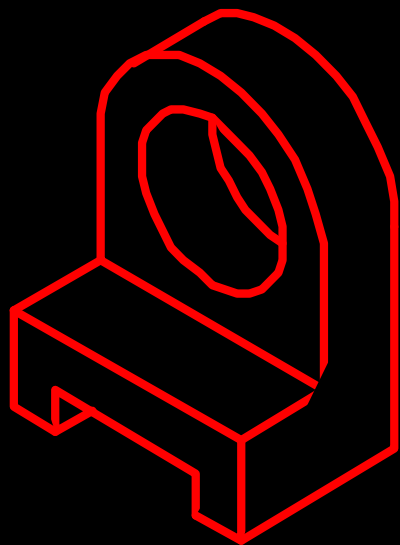
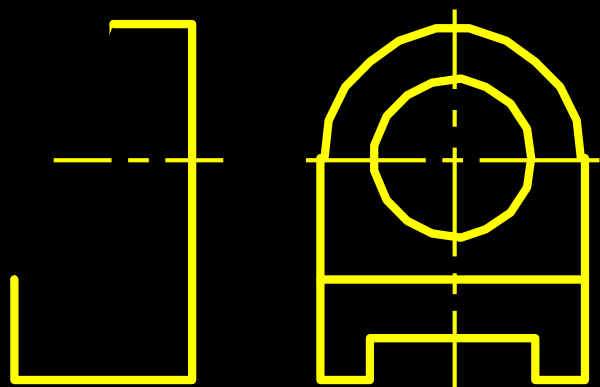


12

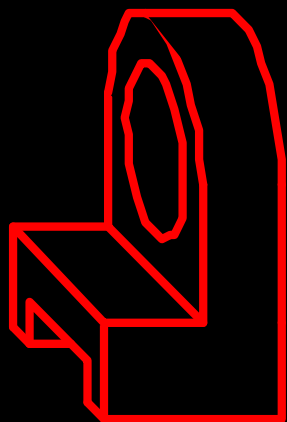


2. 根据已知视图, 画出其正等轴测图、斜二等轴测图.

11

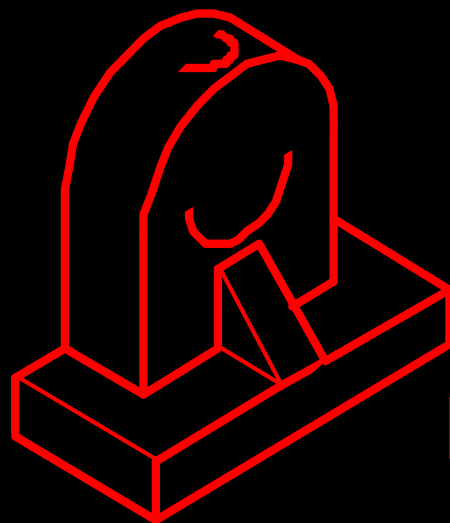
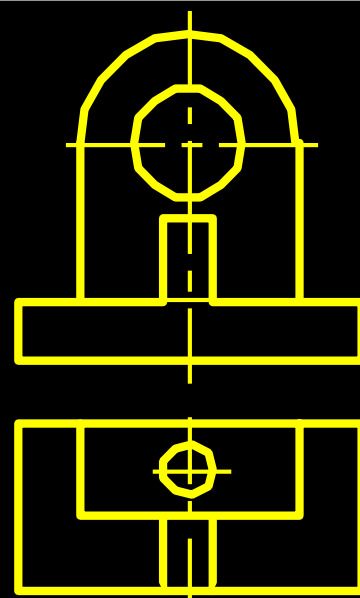


正等轴测图

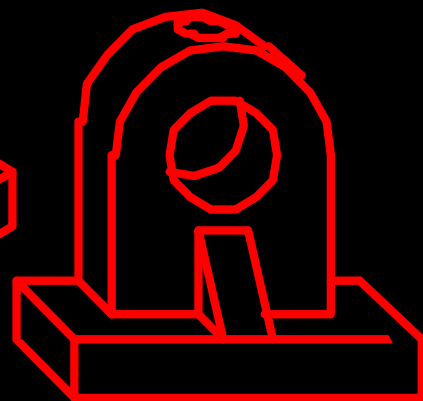


斜二等轴测图

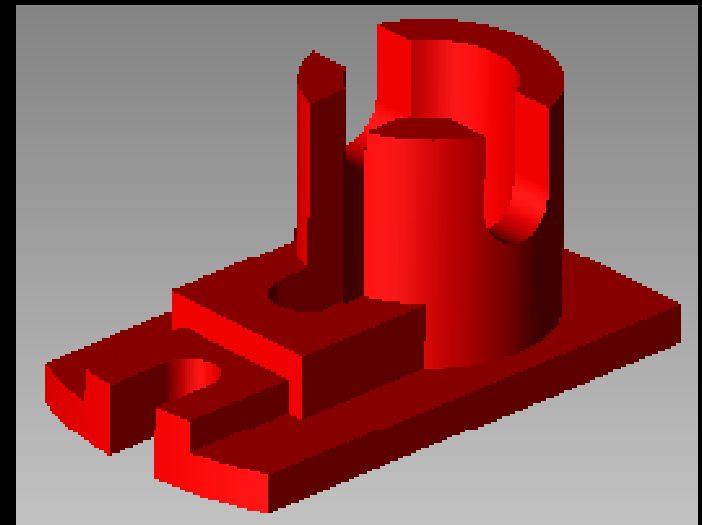
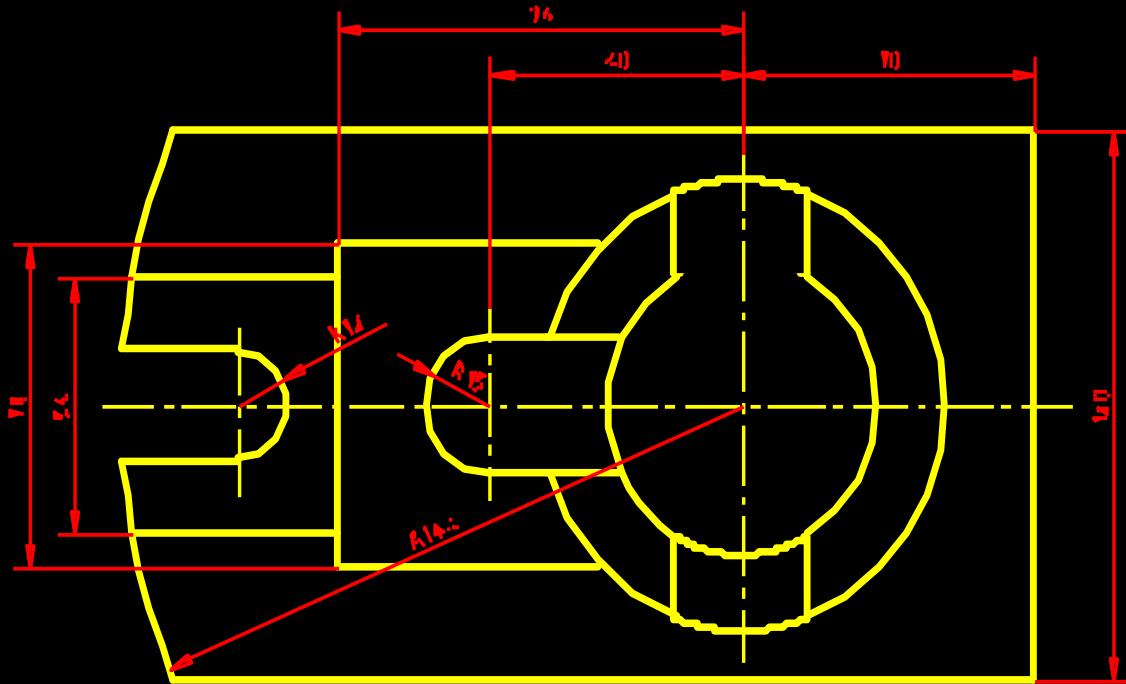
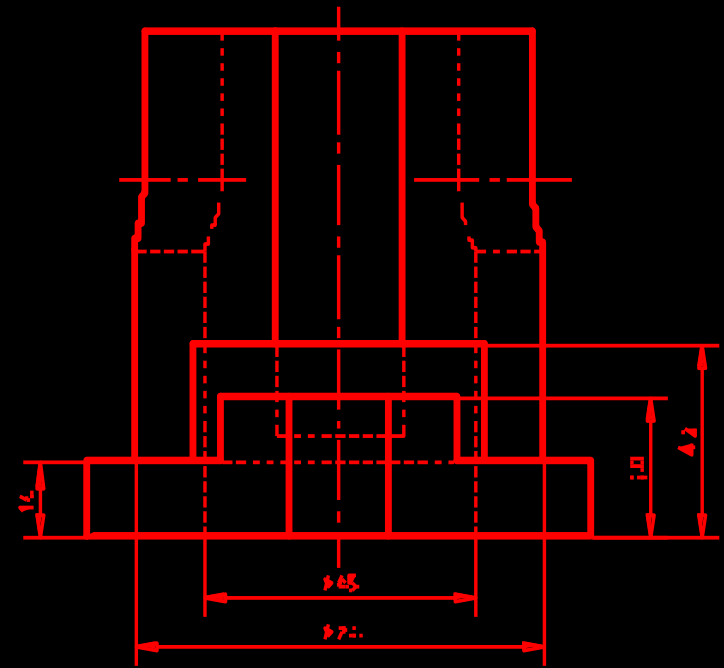
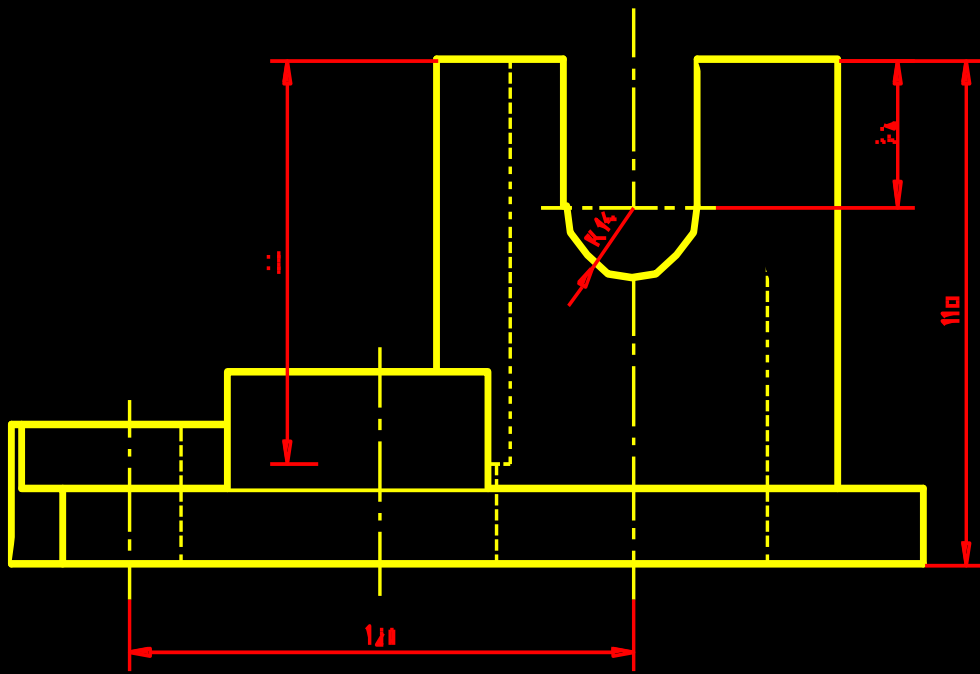
12



正等轴测图



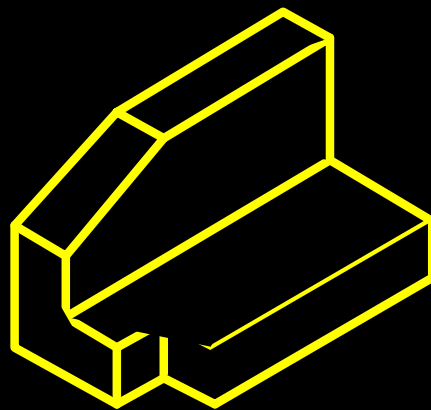
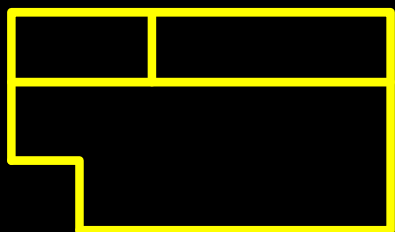
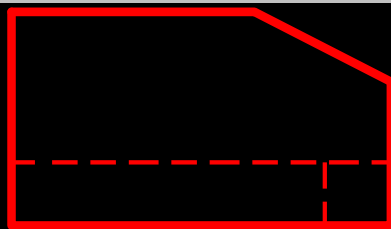
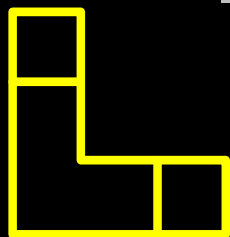
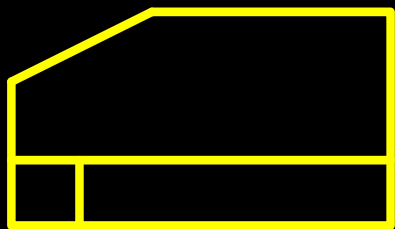
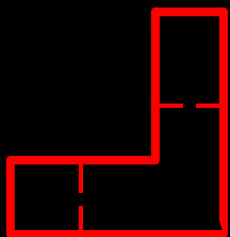
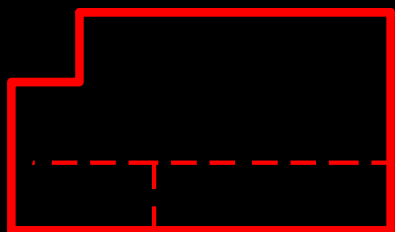
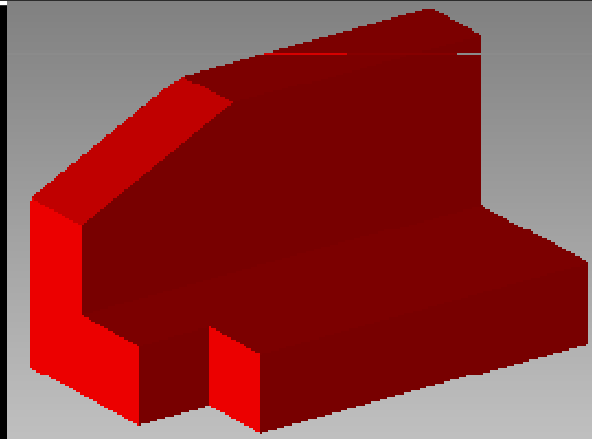
斜二等轴测图



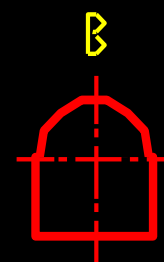
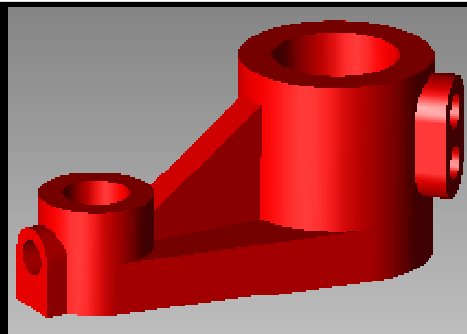
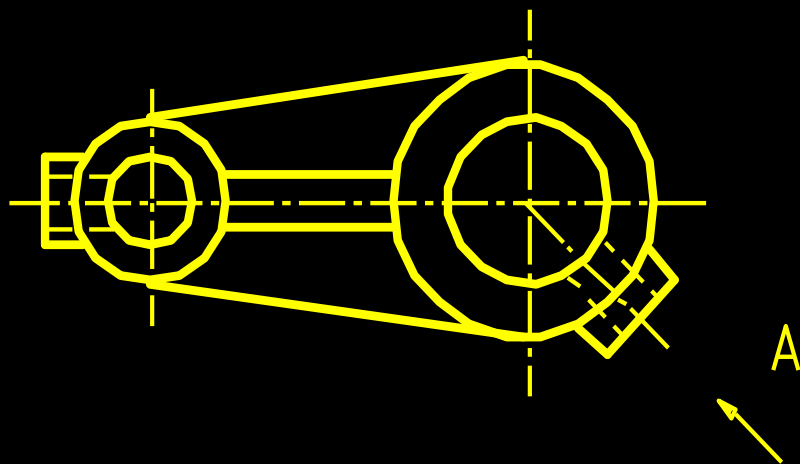
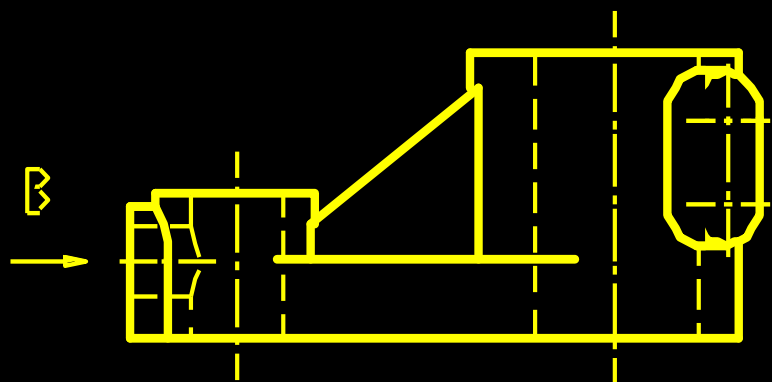
六、图样画法

6-1视图

1. 画出物体的其余三个基本视图



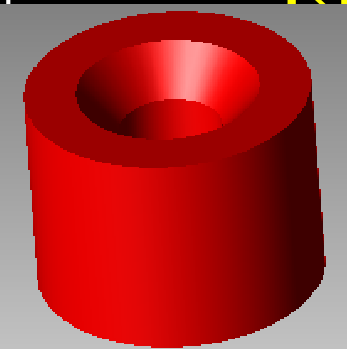
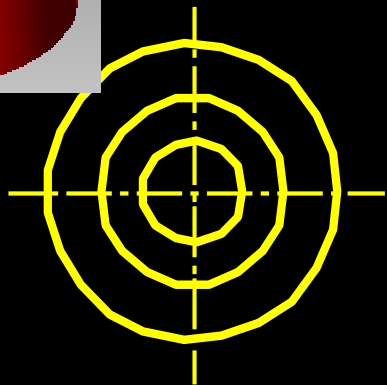
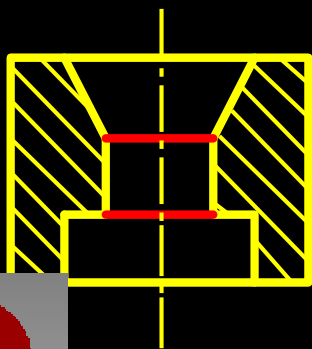
2. 在指定位置画出A向斜视图和B向局部视图



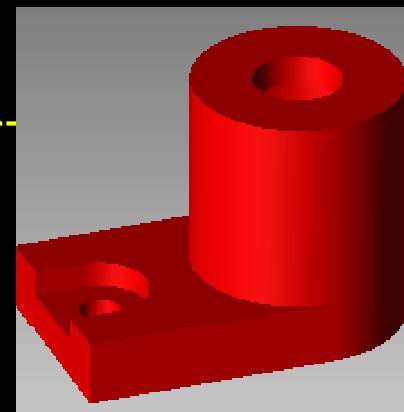
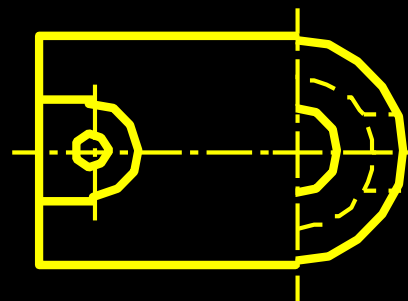
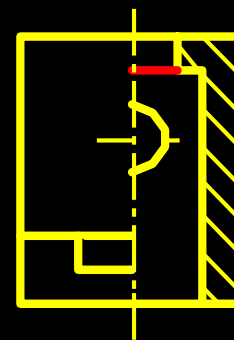
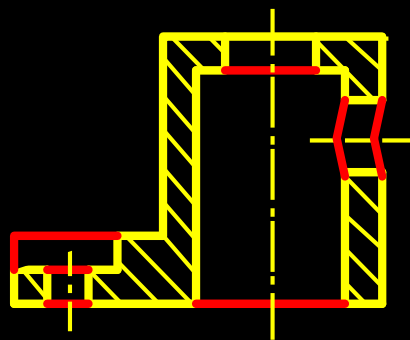
6-2 剖视图

1. 补画下列各剖视图中漏画的线条

11

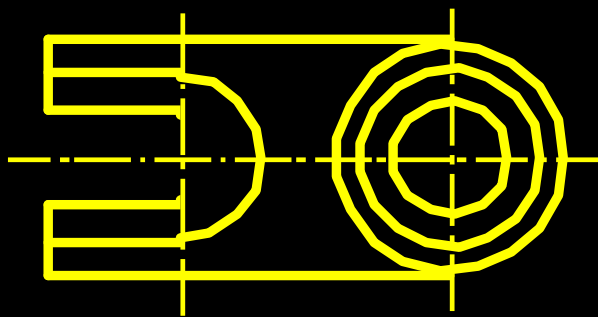
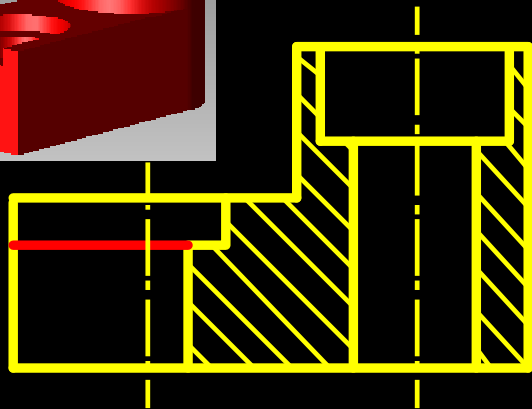
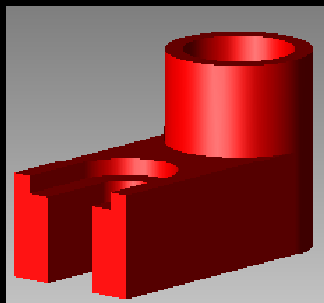


12

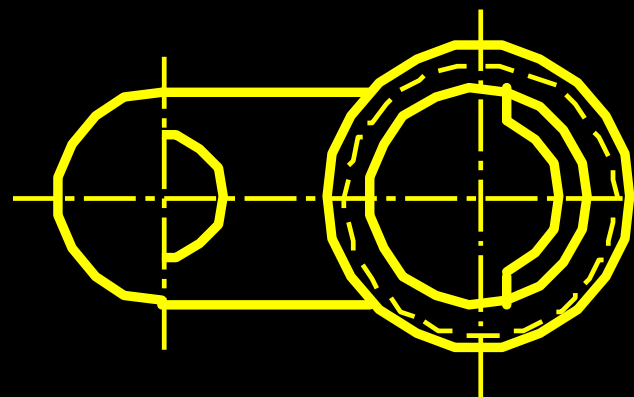
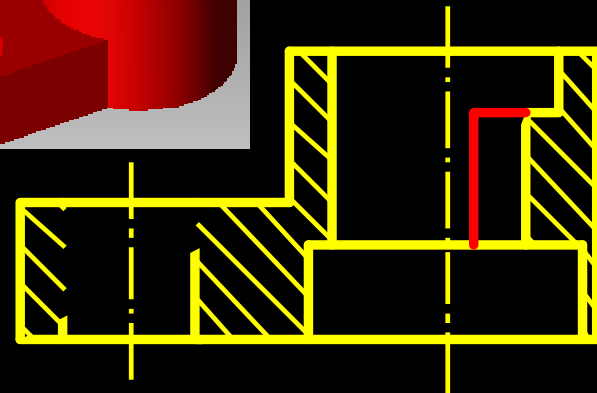
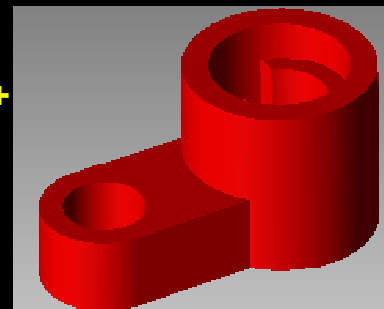


1. 补画下列各剖视图中漏画的线

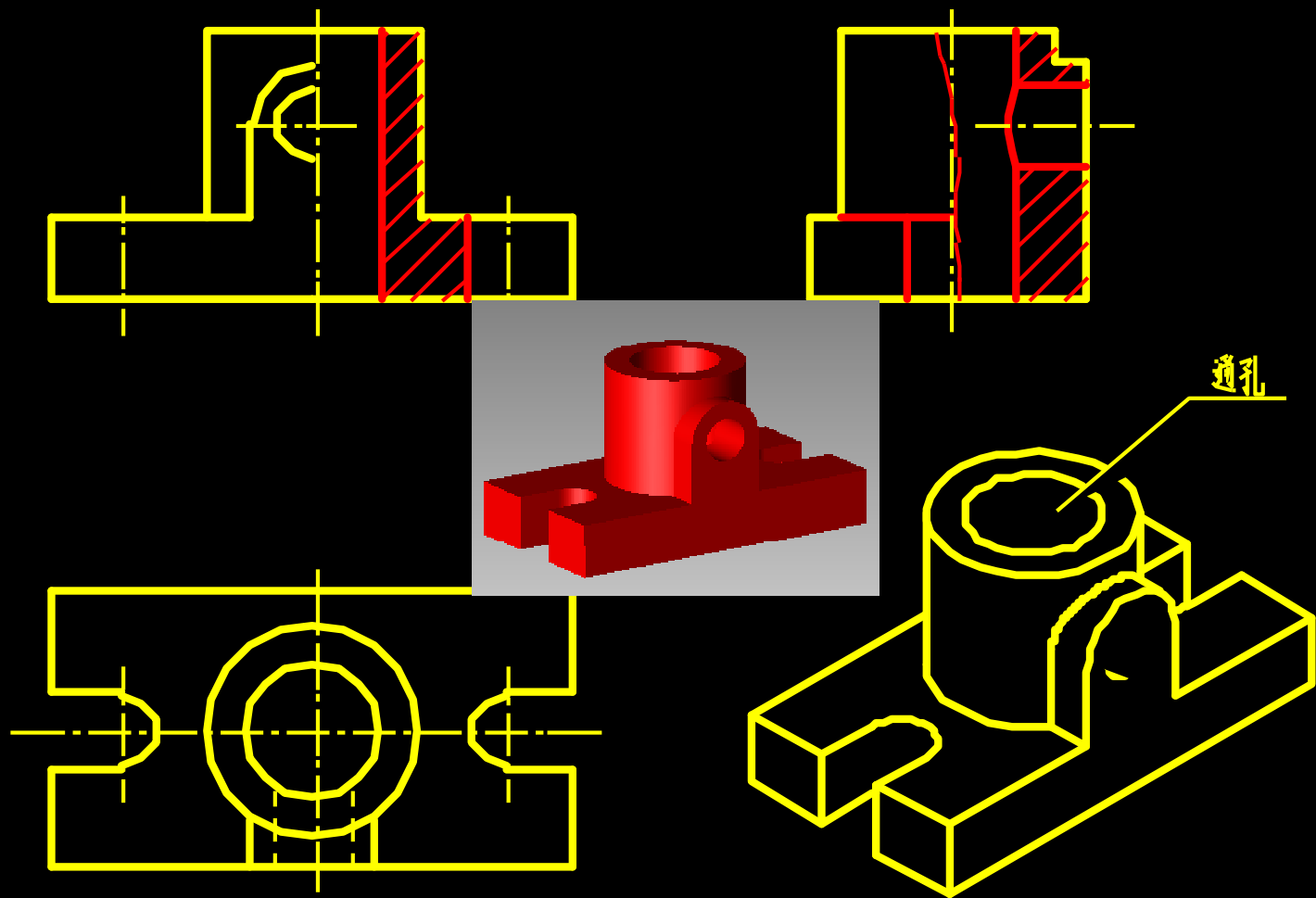
13



14

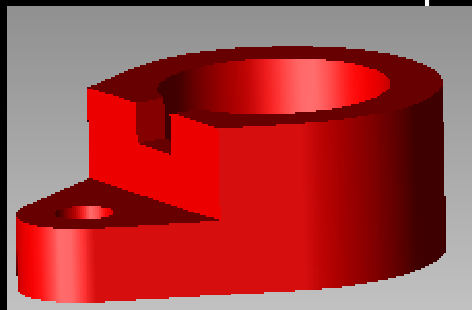
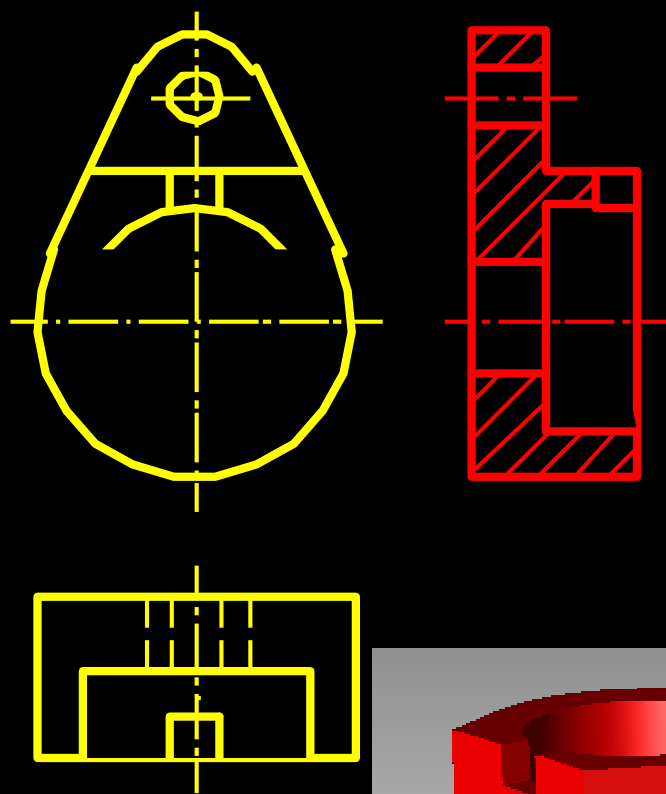


2. 在主视图和左视图上补画适当剖视图

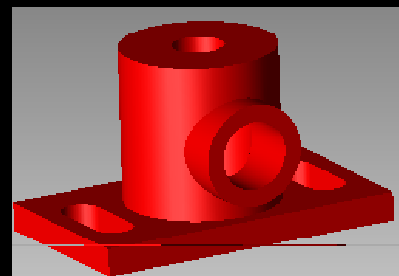
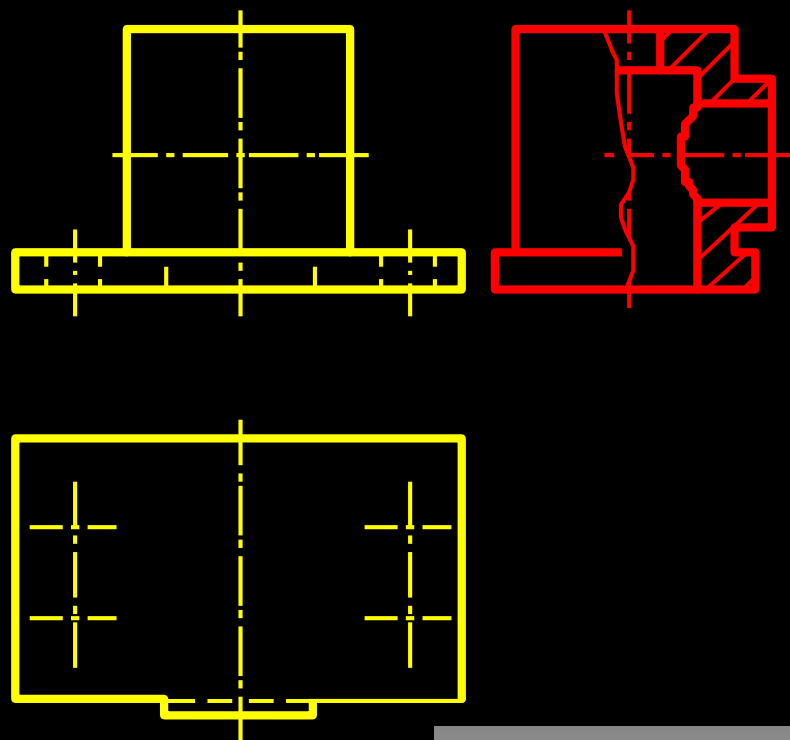


3. 求做左视图，并做适当的剖视

11

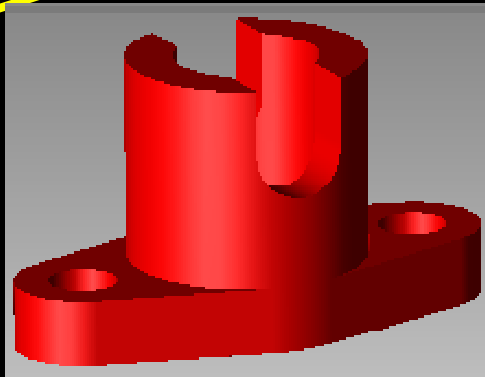
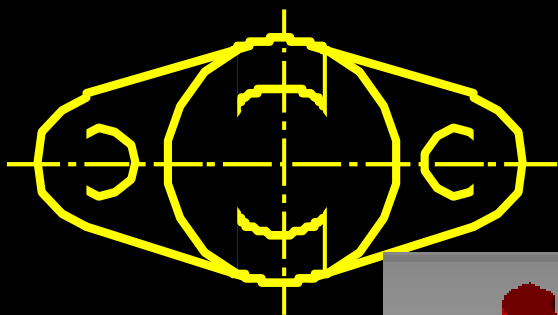
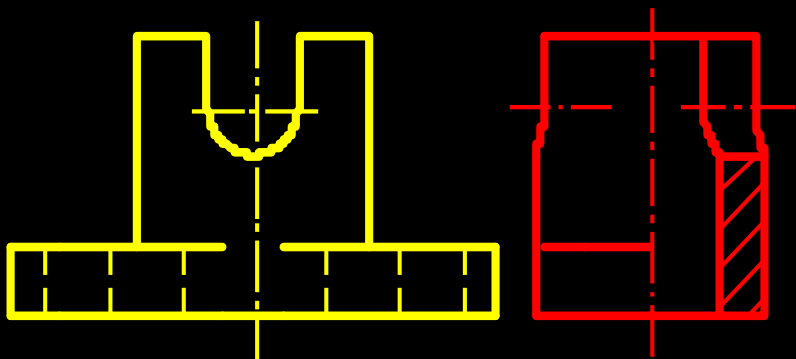


12

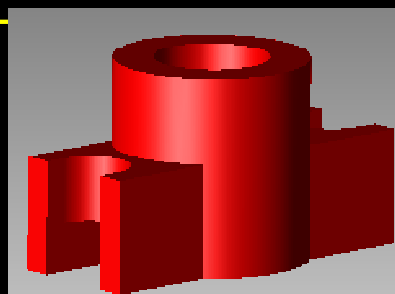
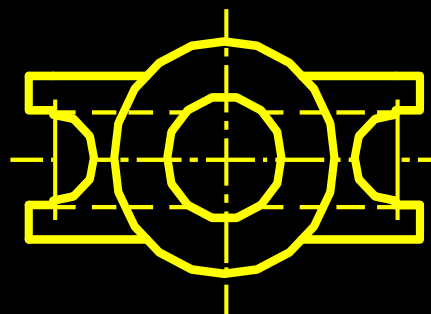
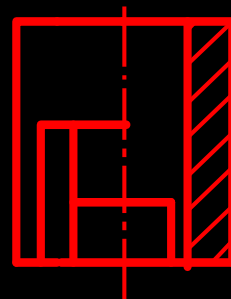
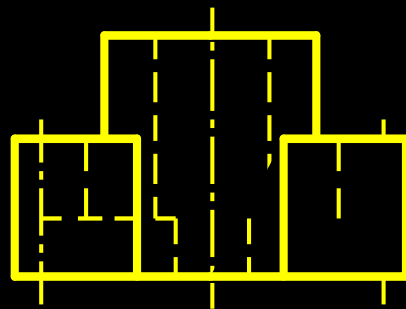


3. 求做左视图，并做适当的剖视

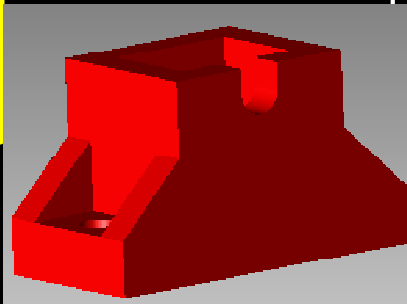
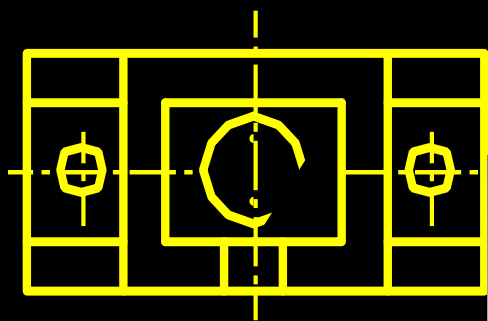
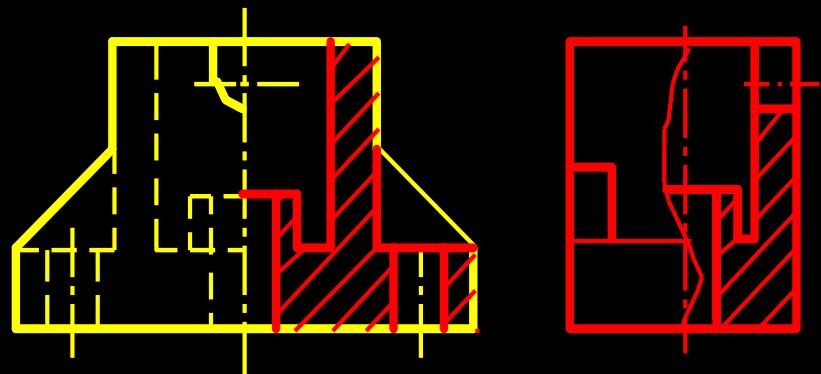
13|



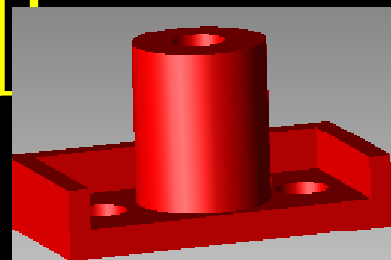
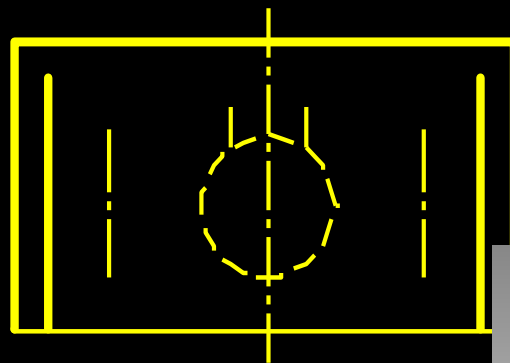
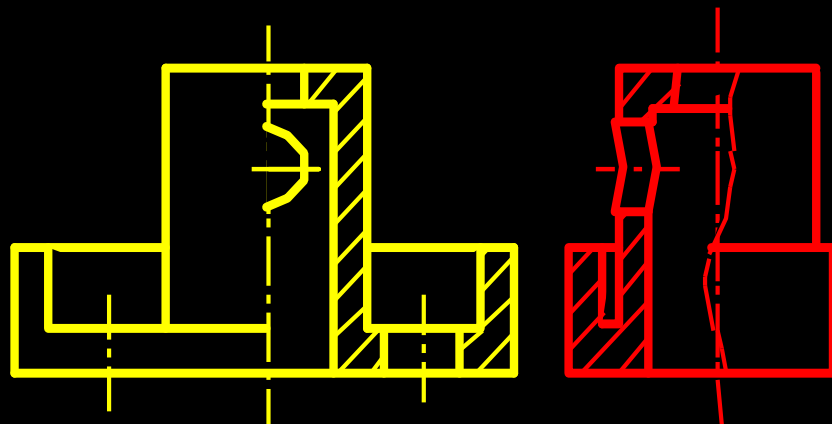
14|



4. 补画主视图半剖视图后，求做左视图，并取适当剖视。

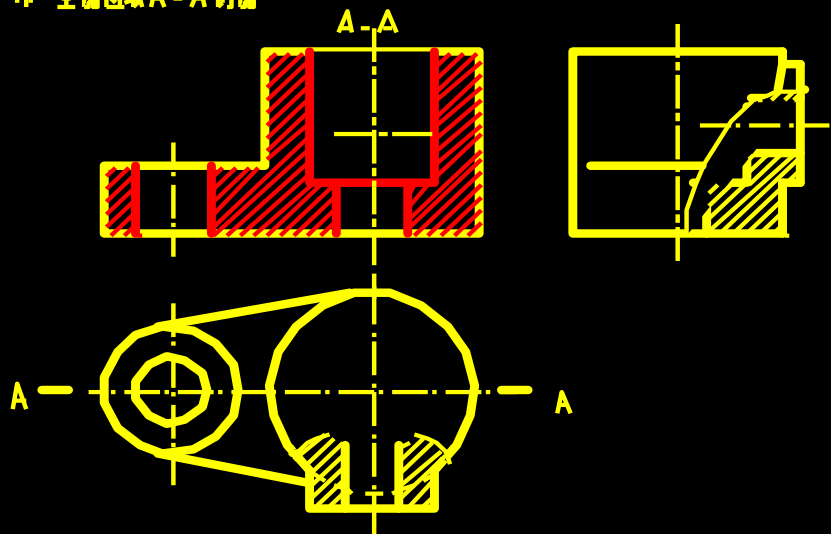


5. 求做左视图，并取适当剖视

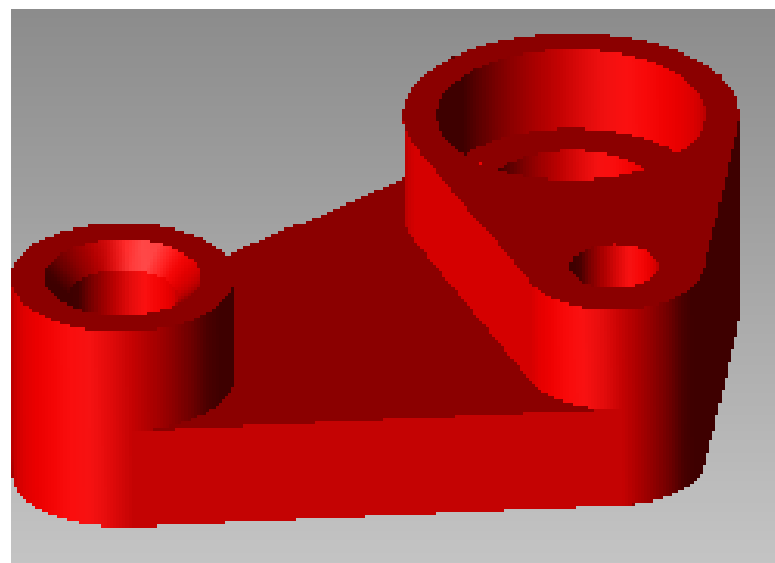
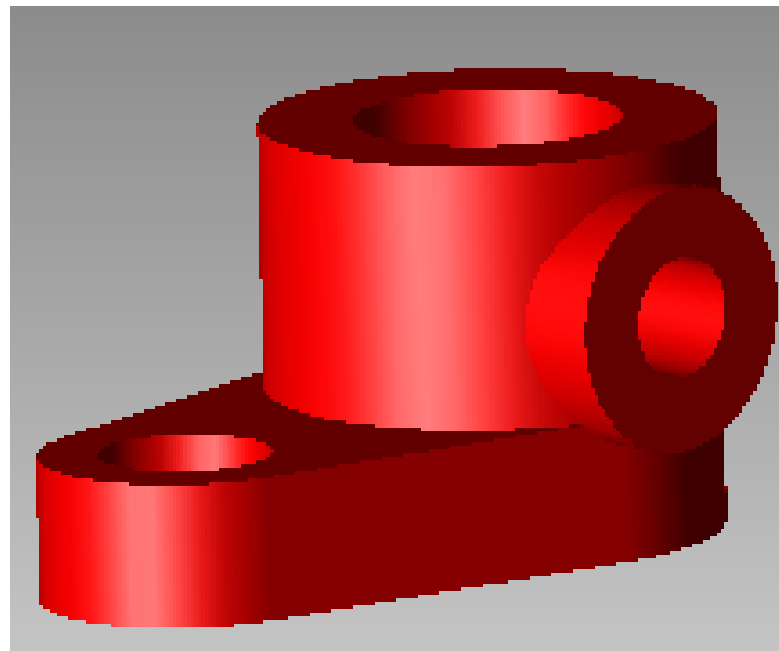
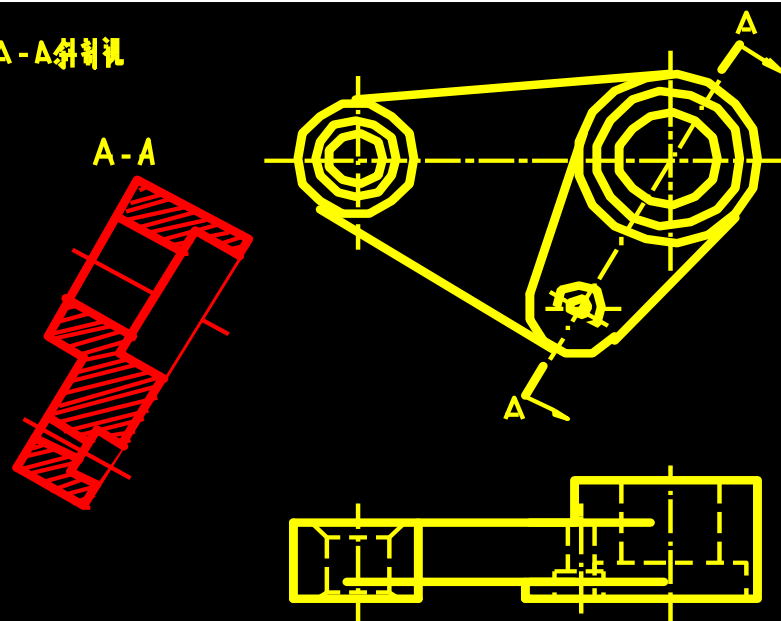


6. 作适当的剖视

1) 主视图取A-A剖视

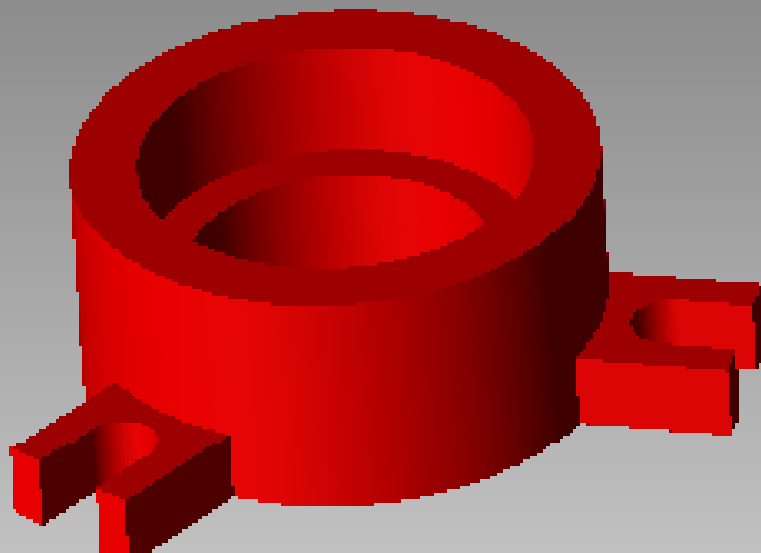
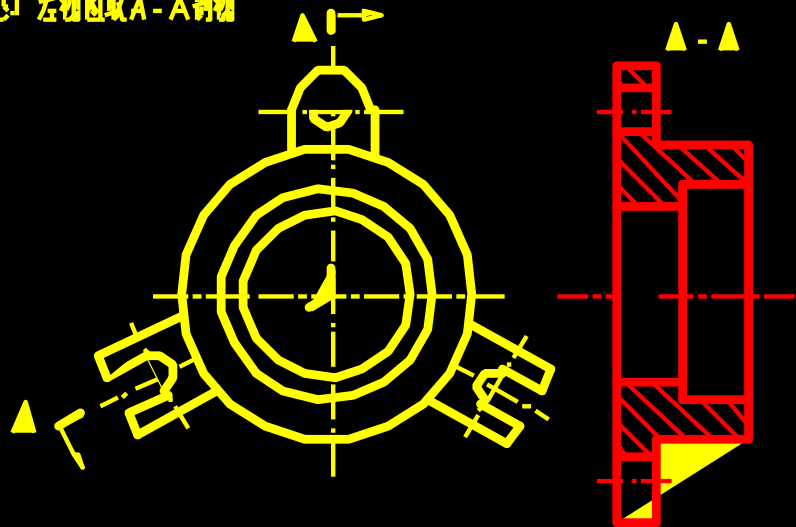


2) 作A-A斜剖视

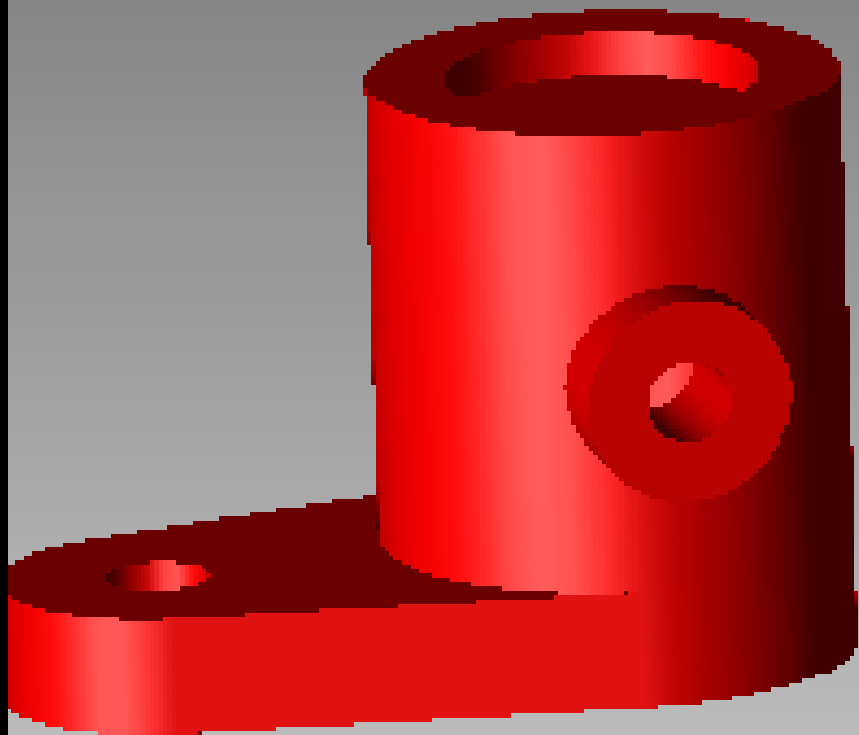
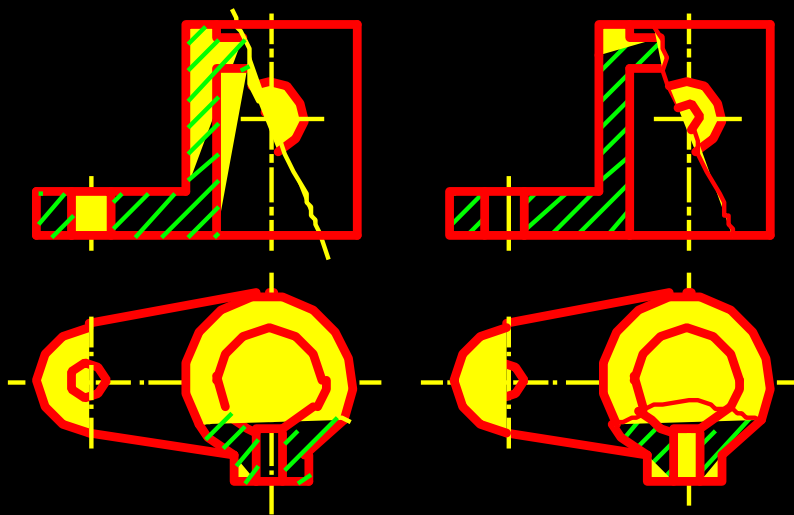


6. 作适当的剖视

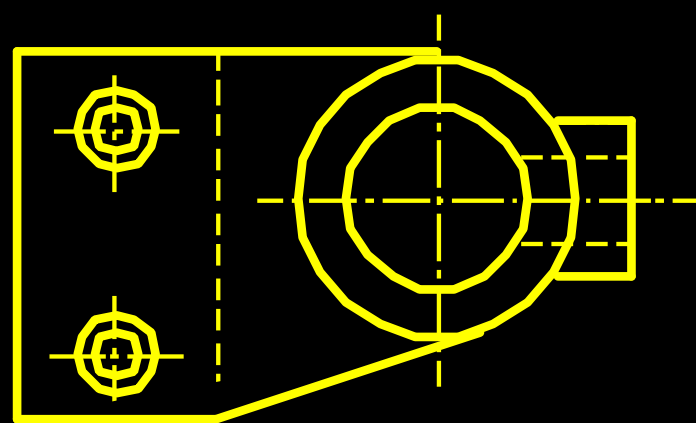
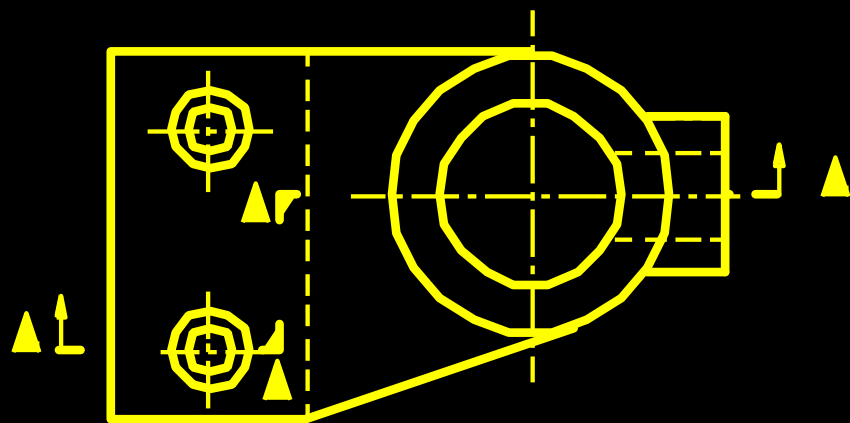
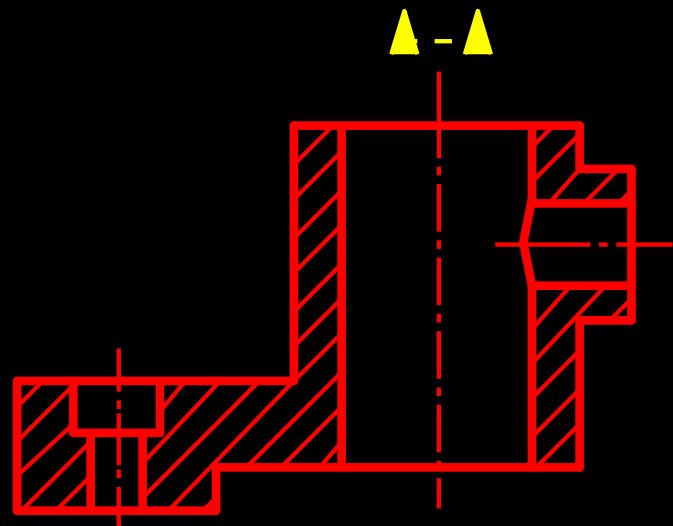
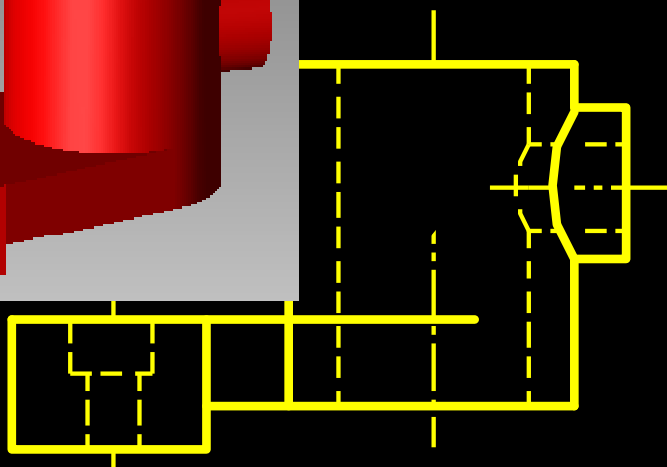
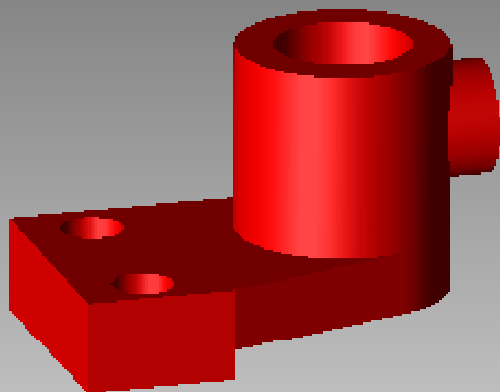
13) 左视图取A-A剖视



14) 查出视图中有有关破折线的错误，改正后画在右边

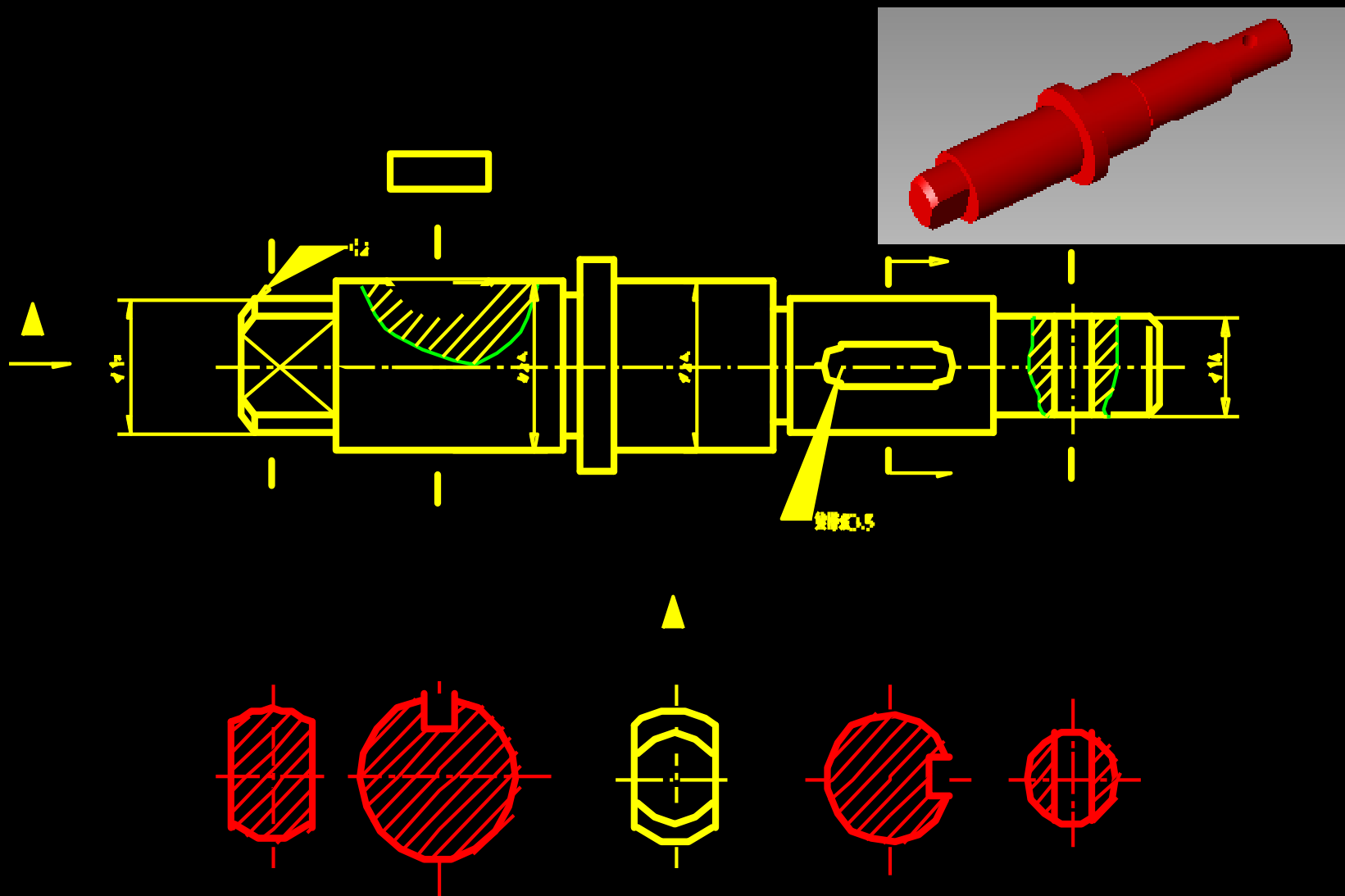


并标注剖切符号，投射方向和剖视图名称

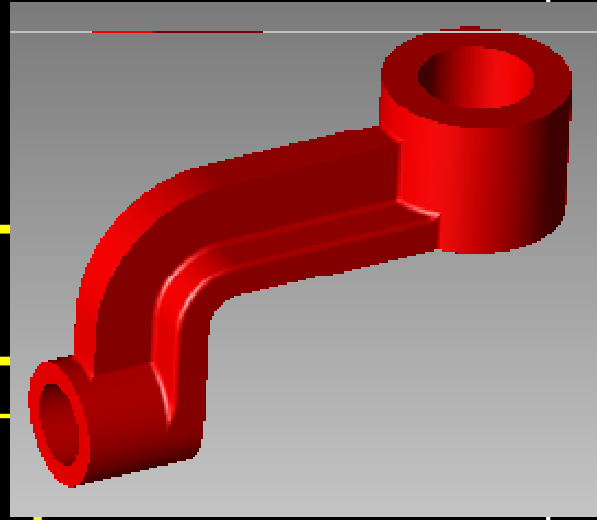
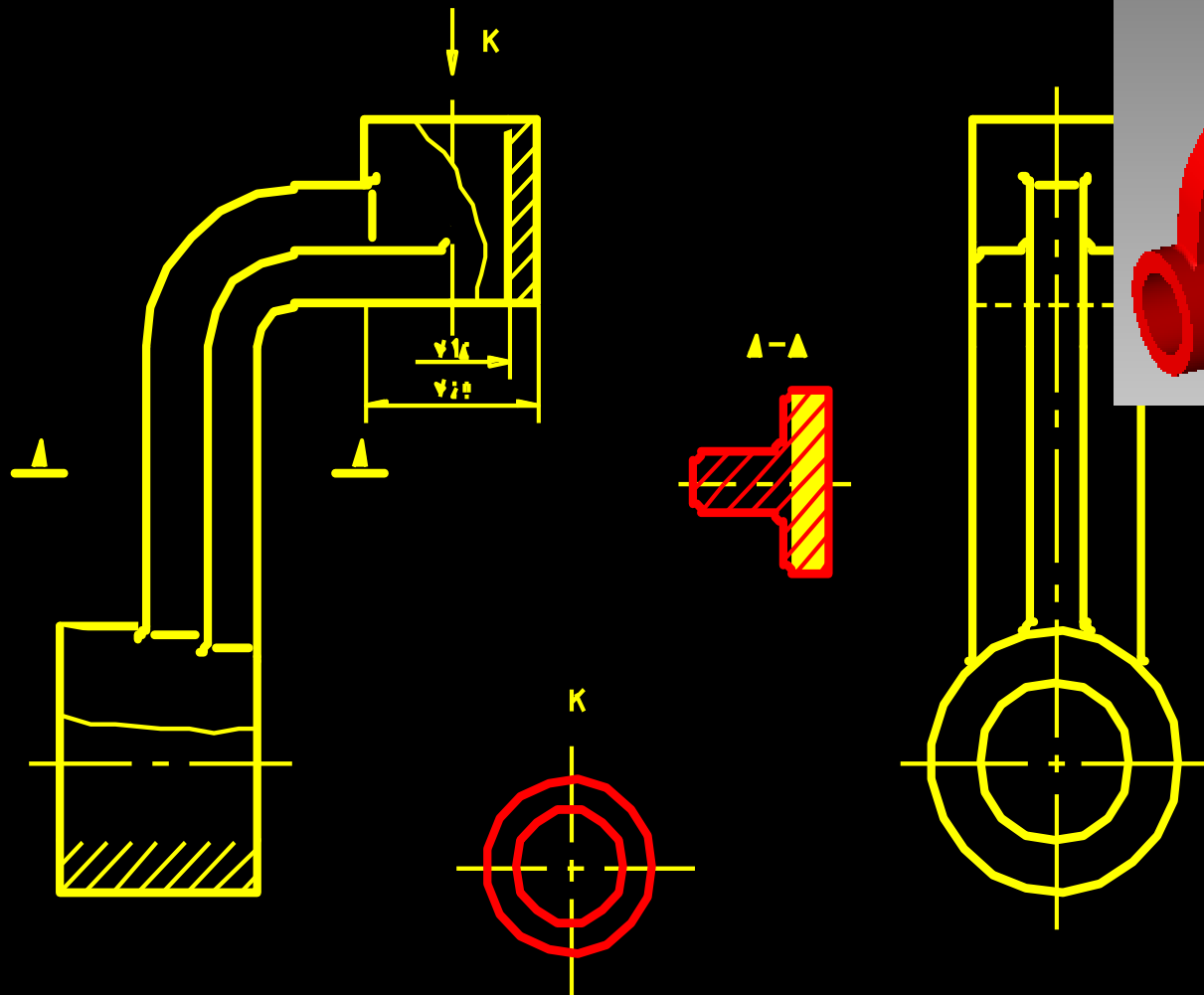


6-3 断面图

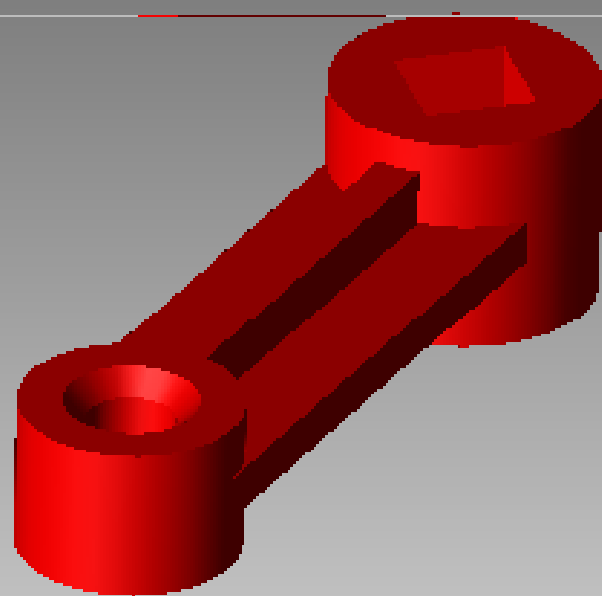
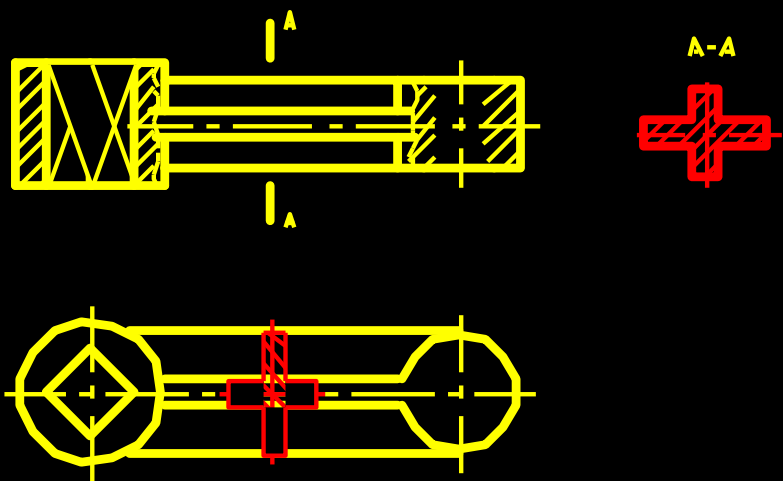
1) 画出转轴的4个移出断面



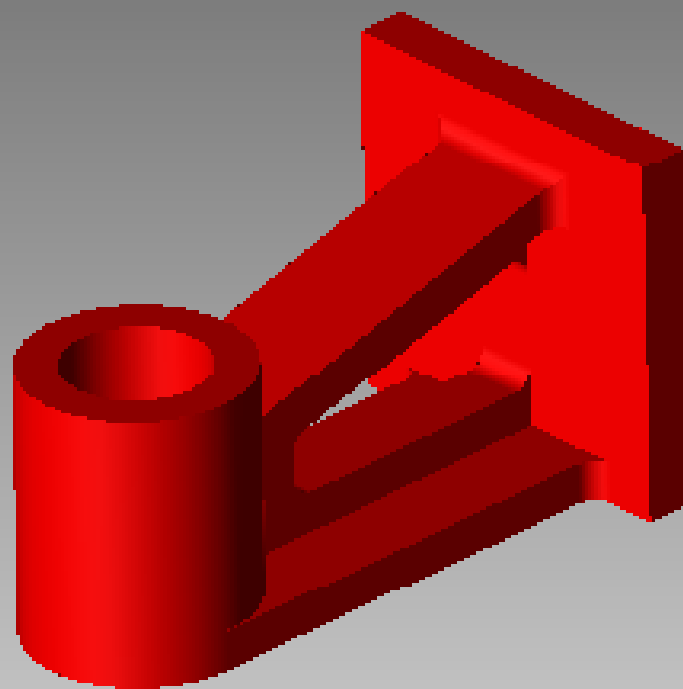
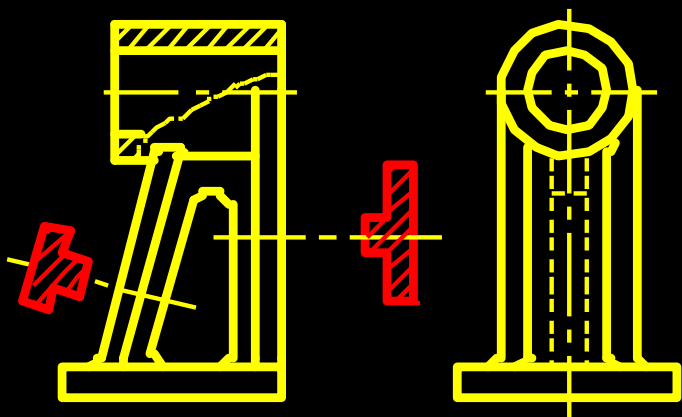
121 在指定位置补画支架的K向视图及A-A移出断面。



13 | 作出连杆肘的断面图 | 重合断面和移出断面 |

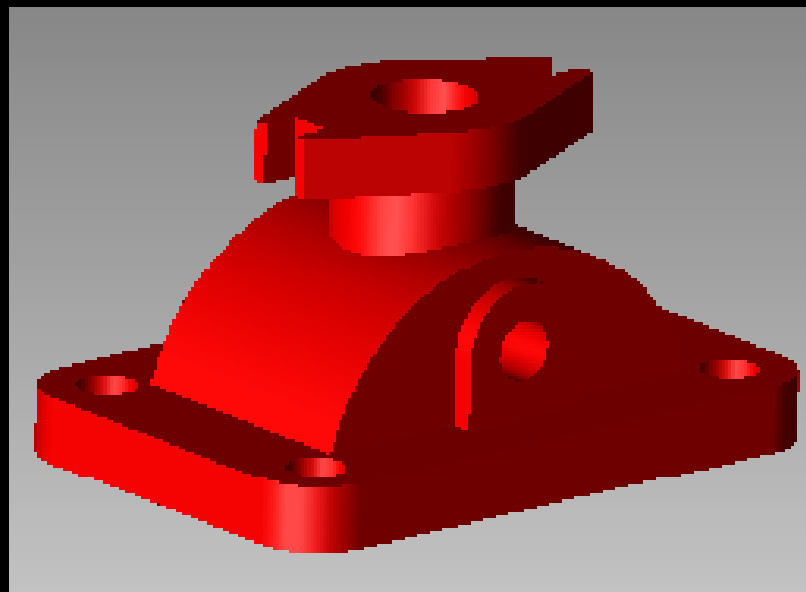
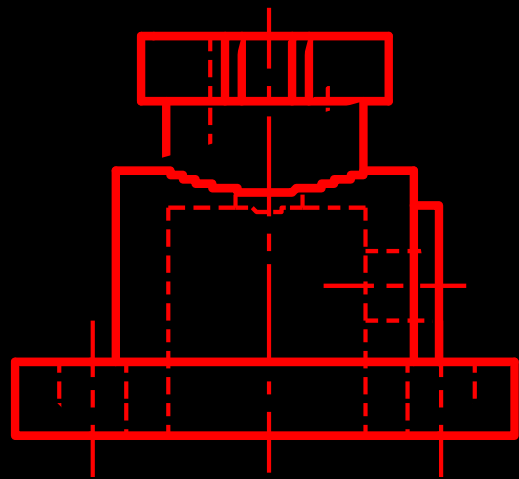
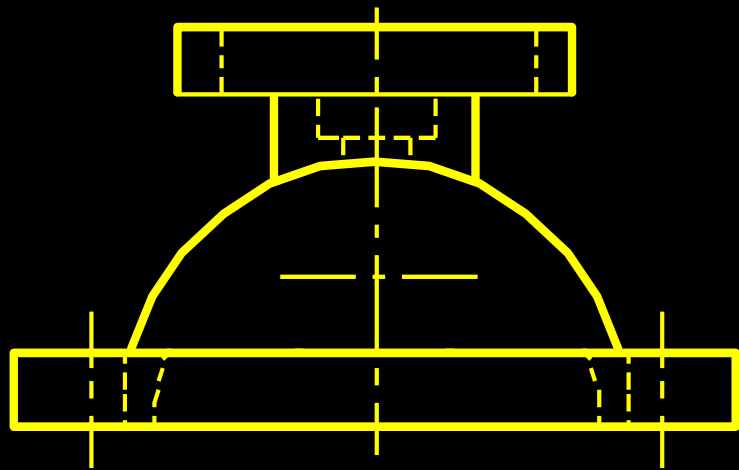


14 | 作出支座的断面图 | 重合断面或移出断面 |

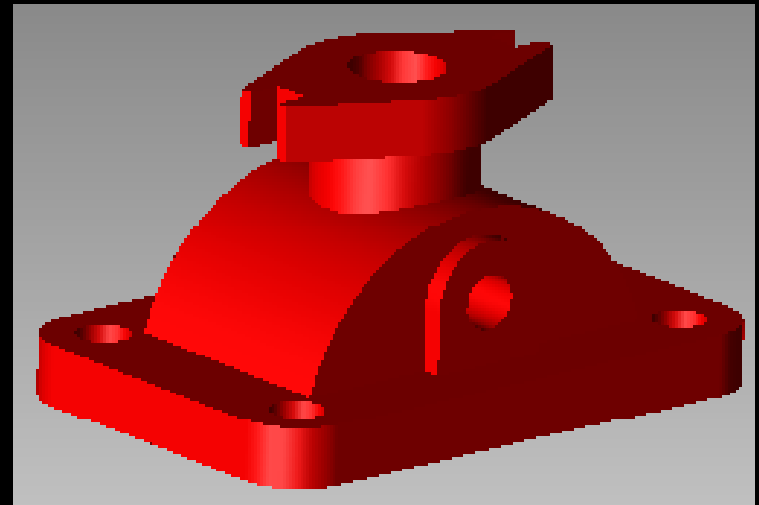
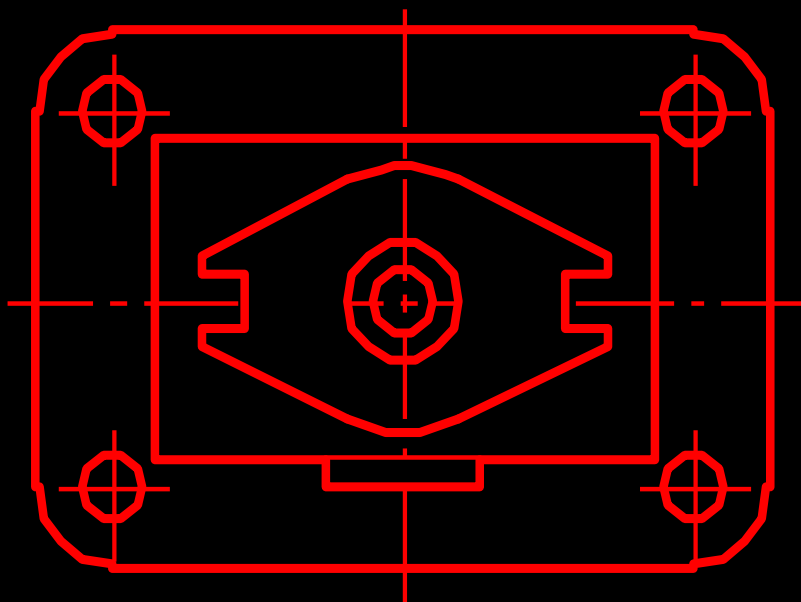
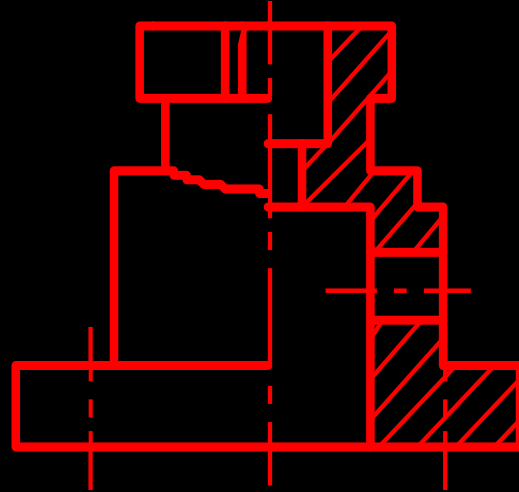
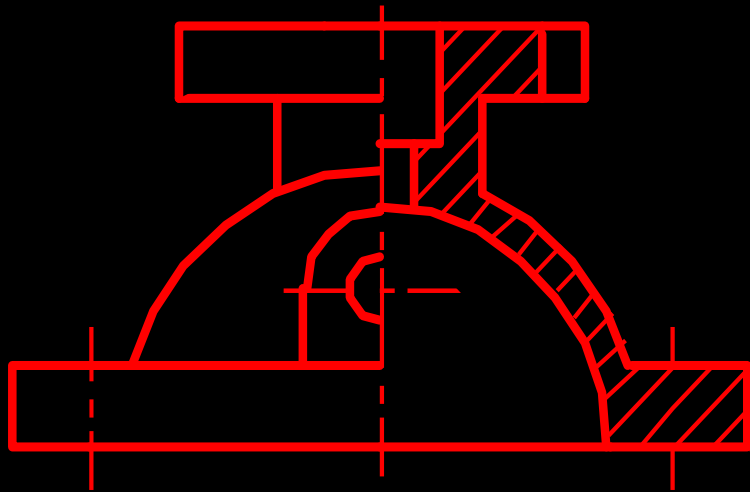


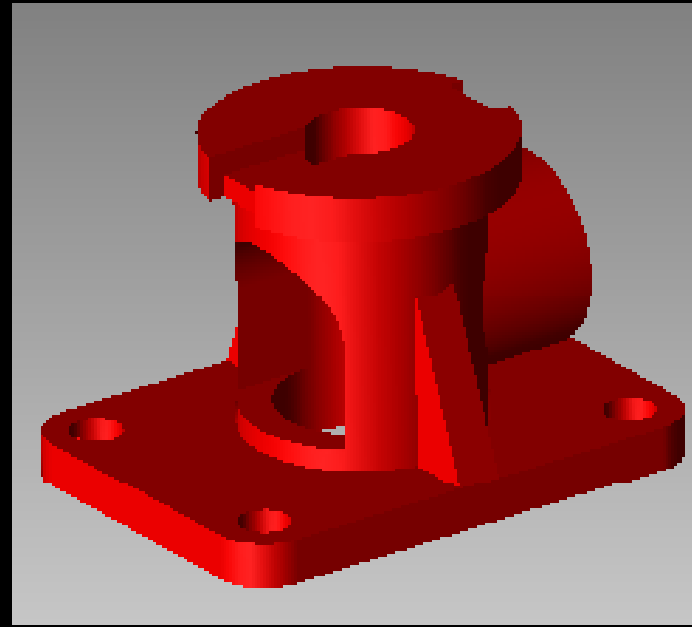
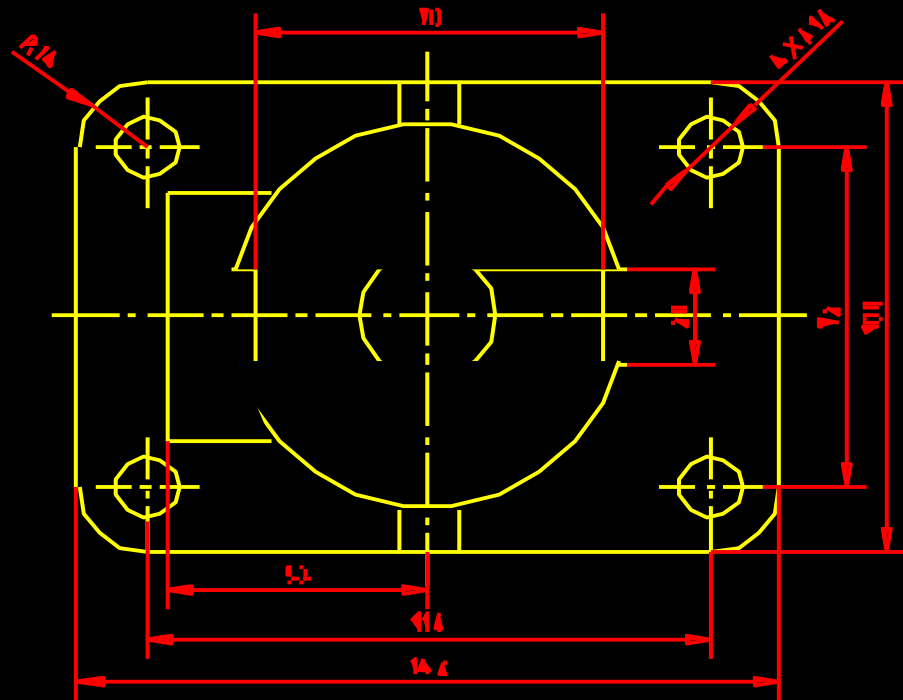
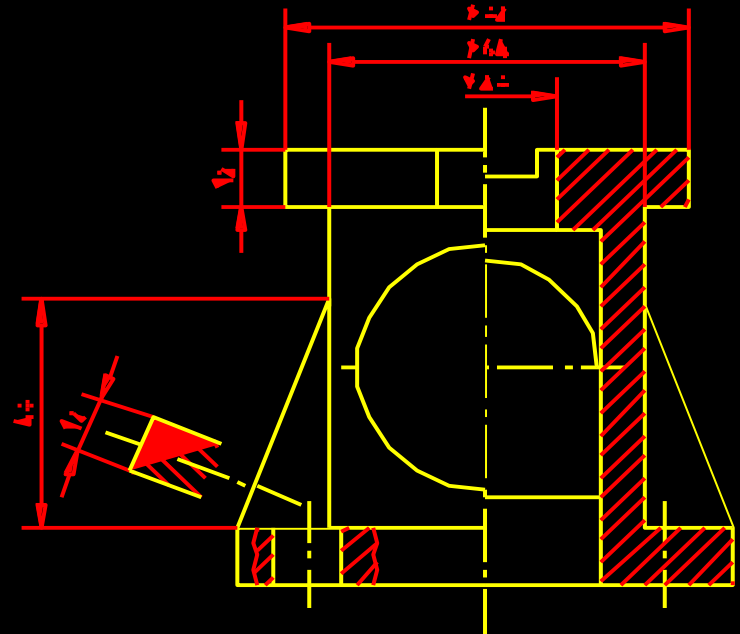
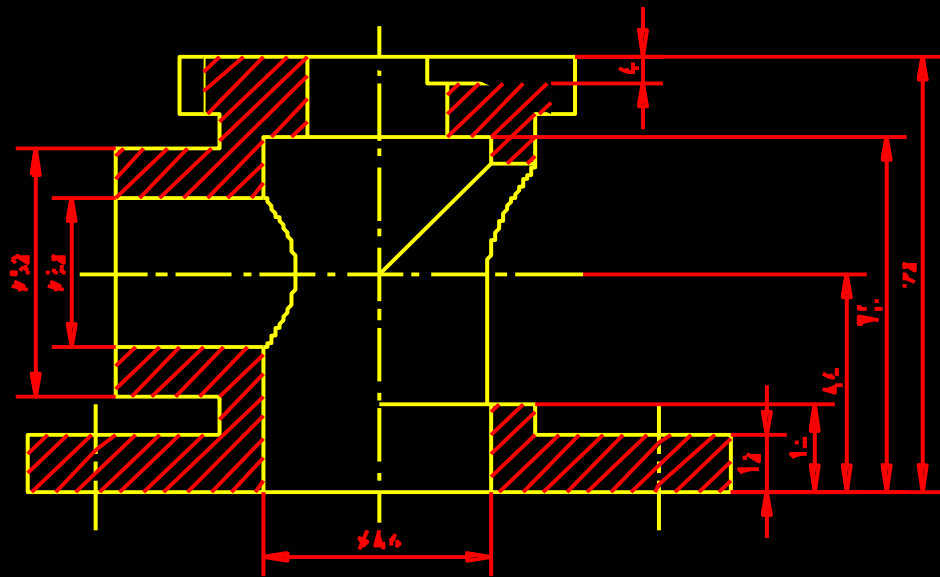
6-4 综合练习

(1) 已知两视图，求作第三视图。



〈2〉将41页组合体的三个视图取适当剖视〈三个视图均画在空白处〉。





七、紧固件

7-1 螺纹的标注方法

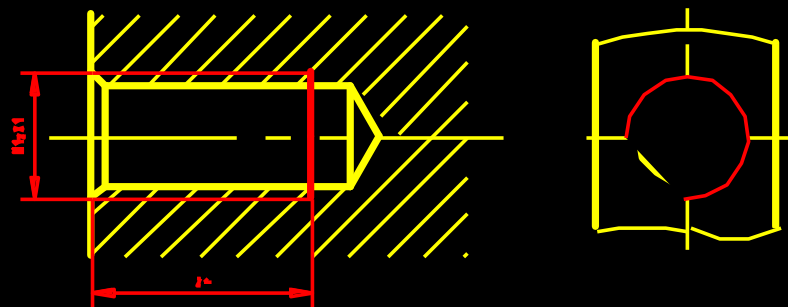
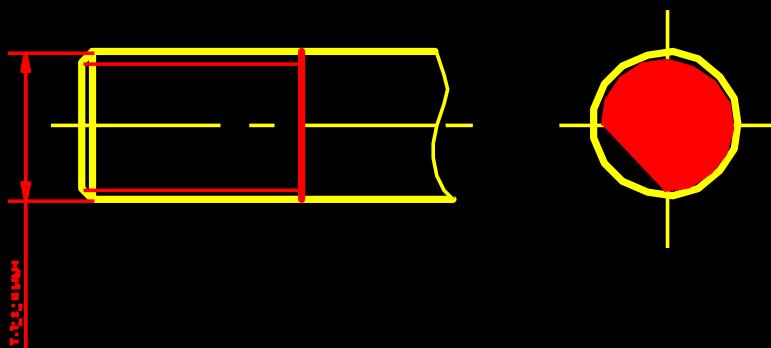
11 由表中的螺纹标记，查出螺纹各要素的数值。

螺纹标记	螺纹种类	螺纹公称直径	螺距	导程	线数	旋向	其他
M 16-7H	粗牙普通螺纹	16	2mm	2mm	单	右旋	中径与顶径公差带代号均为 7H
M 30X2-5g 6g	细牙普通螺纹	30	2mm	2mm	单	右旋	中径、顶径公差带代号分别为 5g、6g
Tr 21X8P4-LH-7H	梯形螺纹	21	4mm	8mm	双	左旋	中径公差带代号为 7H
Tr 36X6-8e	梯形螺纹	36	6mm	6mm	单	右旋	中径公差带代号为 8e
G 1/2A	非螺纹密封的管螺纹	1/2英寸	1.814mm	1.814mm	单	右旋	公差带等级为 A

12 画出螺纹的两视图，并在视图上按规定对螺纹进行标注。

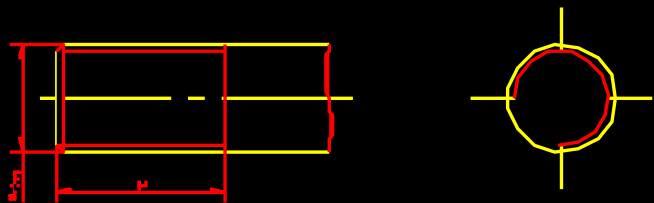
① 梯形螺纹，大径 12mm，导程 3mm，线数 2，左旋

② 细牙普通螺纹，大径 12mm，螺距 1mm，螺纹长度 26mm。

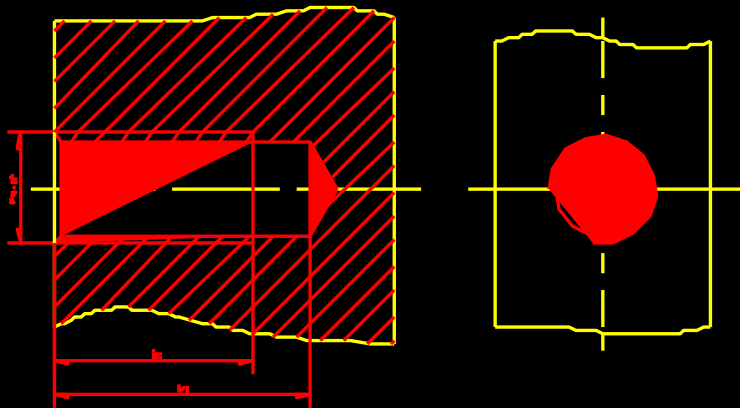


7-2 螺纹的画法

111 画出外螺纹的剖视图。已知普通螺纹大径为20mm，螺距为2.5mm，单线右旋，中径和大径公差代号为6g，螺纹有效长度为30mm，头部倒角为C1。
要求：1. 画出图形（按1:1的比例绘制）；2. 标出螺纹标记和螺纹长度。

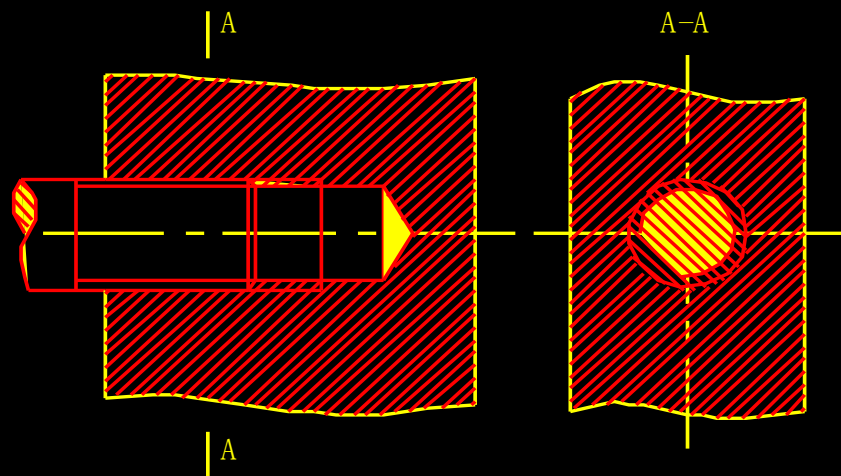


112 画出内螺纹的剖视图。已知M20-6H螺纹的有效长度为36mm，每孔深46，端面倒角为C1。
要求：1. 画出图形（按1:1的比例绘制）；2. 标注尺寸包括有效长度和孔深。

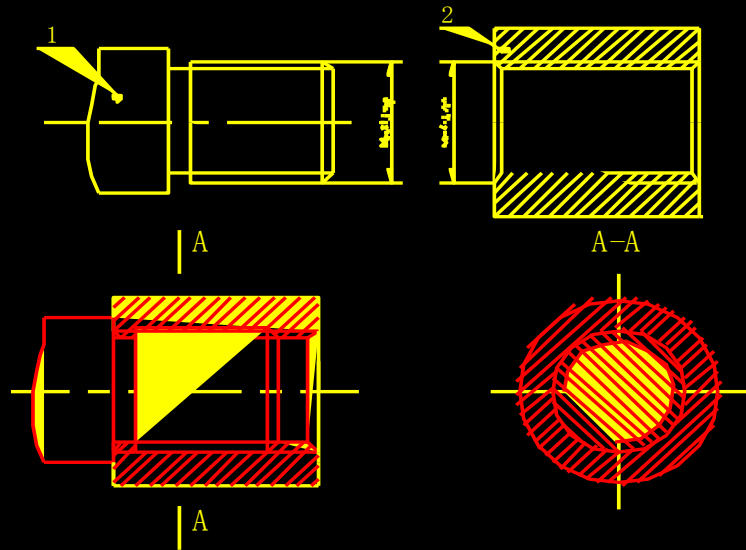


7-3 螺纹连接的画法

113 按65页(1)、(2)题的内、外螺纹连接起来，旋合长度为25mm；主视图画全剖视图，左视图画A-A剖视图。



114 将零件1放入零件2中，旋紧为止，图形画在给定位置，并取A-A剖视图。



7-4 螺栓连接的画法

画螺栓连接图。

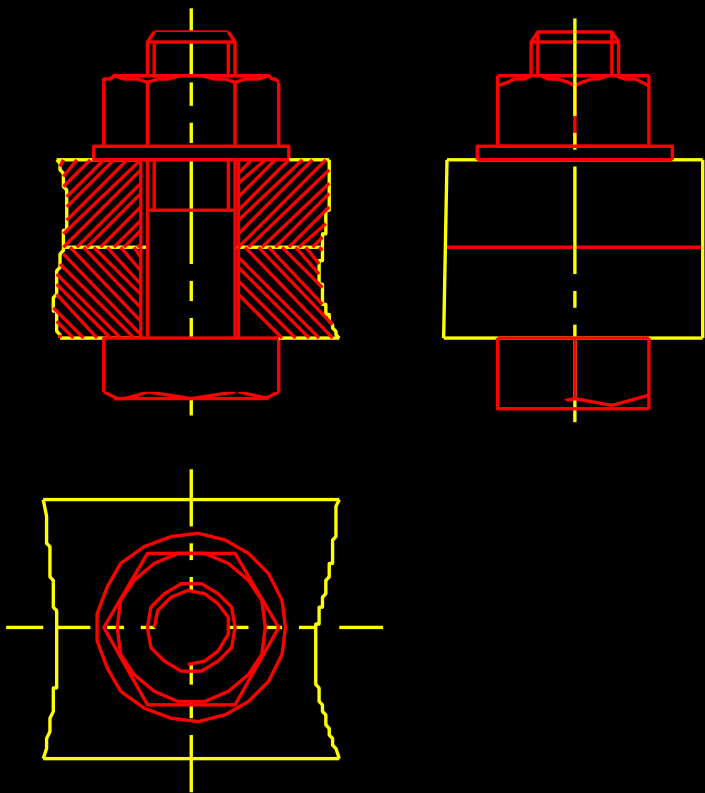
已知：金属板厚 $\delta_1 = \delta_2 = 16$ ，用螺栓连接；

螺栓 GB/T5782 M16 \times L (L 计算后取标准值)；

螺母 GB/T6170 M16；

垫圈 GB/T97.1 M16。

要求：按 1 的“比例画法”完成螺栓连接的三视图(主视图画成全剖视图)。



7-5 螺钉连接的画法

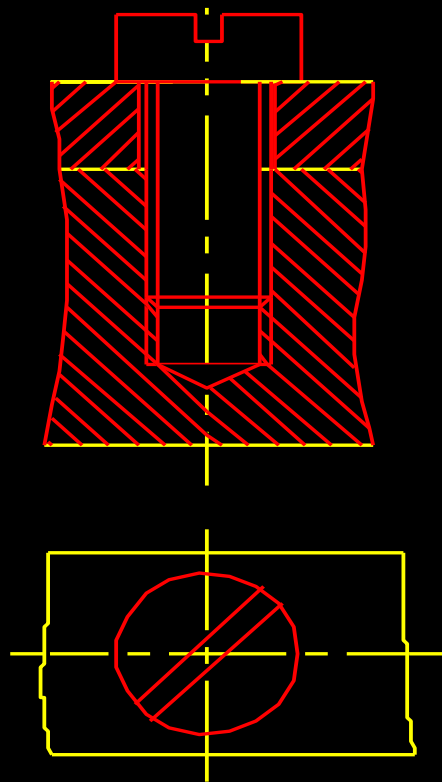
画螺钉连接图。

已知：上板材料为铜， $\delta_1 = 8$ ；

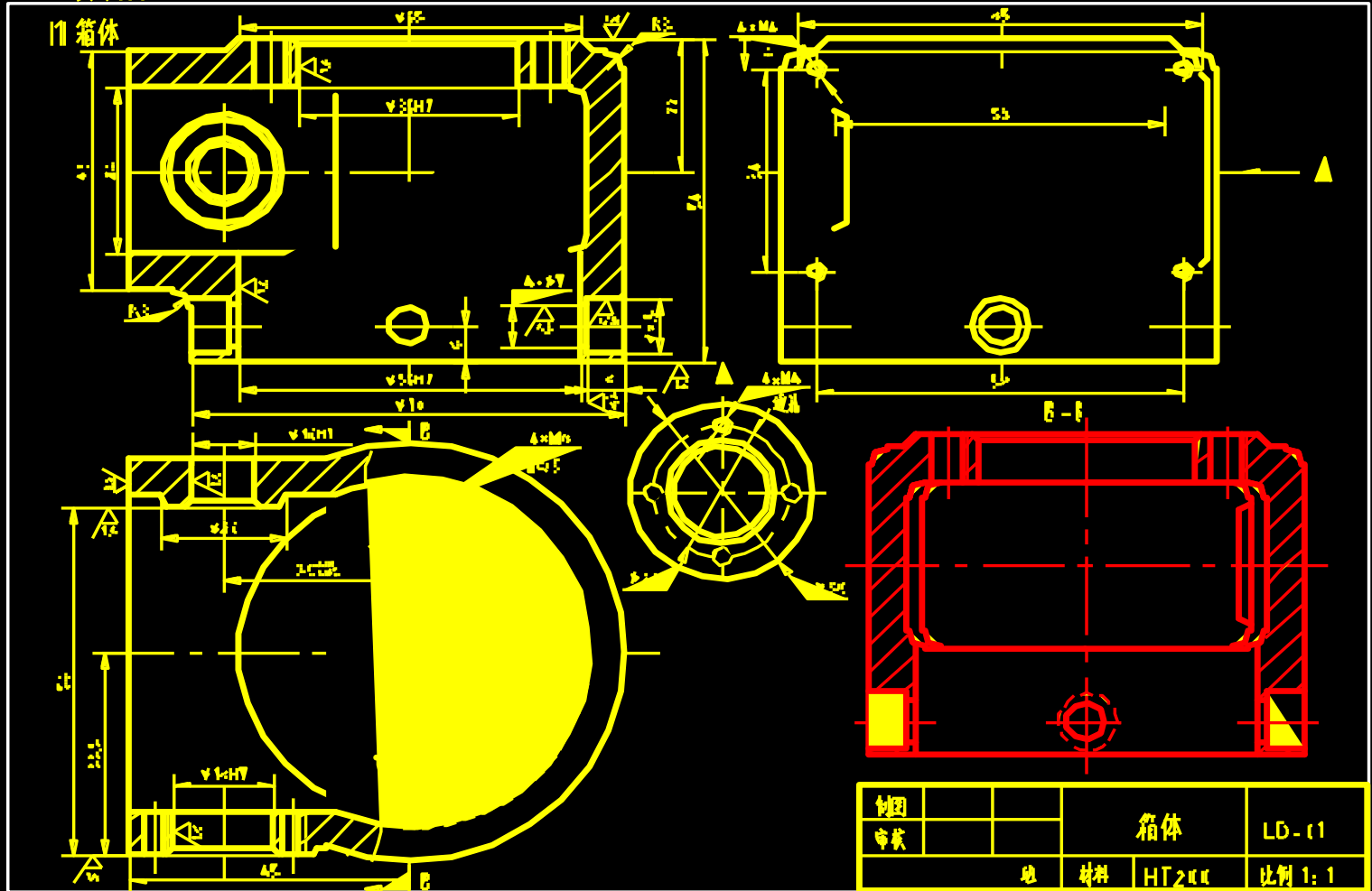
下板材料为铸铁， $\delta_2 = 25$ ；

螺钉 GB/T65 M10 \times L (L 计算后取标准值)。

要求：按 2 的“比例画法”完成螺钉连接的两个视图(主视图画成全剖视图)。

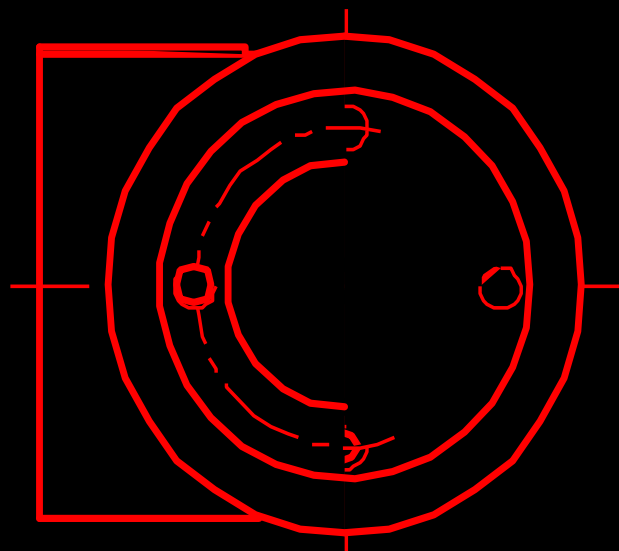


八.读零件图



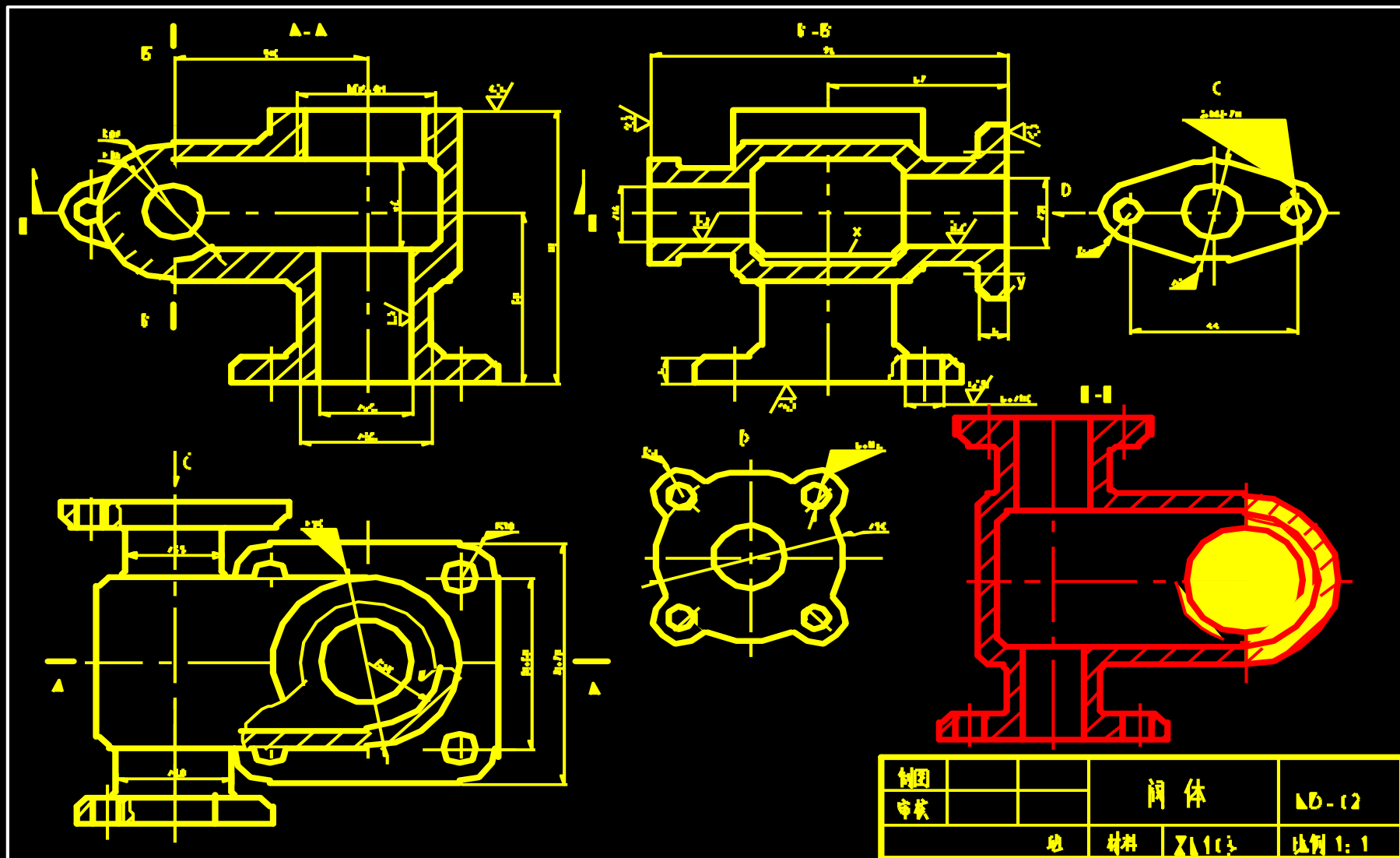
八.读零件图

11 箱体仰视图

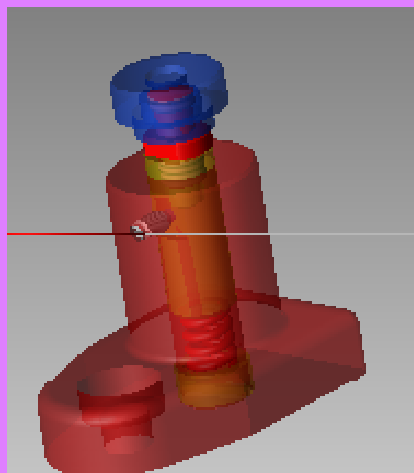


视图			箱体	LD-11
审核			地 材料 HT200	比例 1:1

11 阀体



制图			阀体	11-12
审核				
地	材料	HT103	比例	1:1



05 02 03 04 05 06 07 08 09 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100

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