Isometric Calculations 等距计算
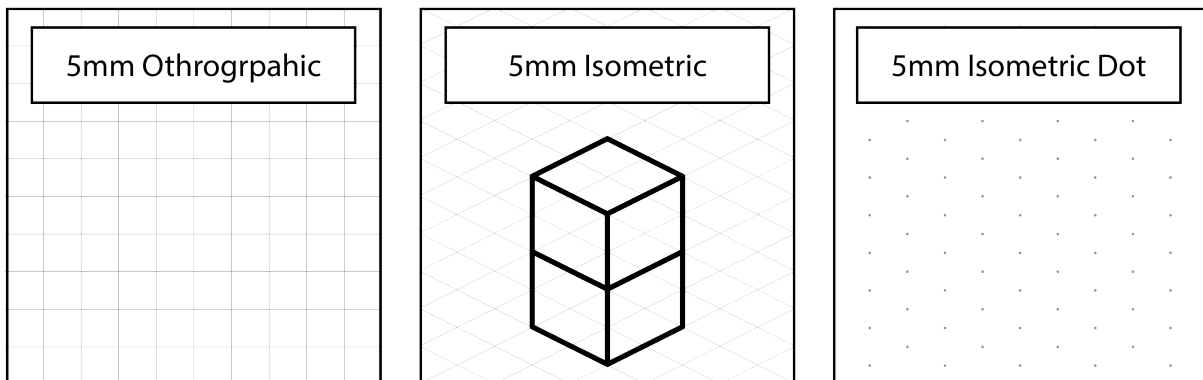
English Name 英文名字:_____ Grade and Class 年级班级:_____-___

There are several different types of graph papers that are used to create technical drawings. "***Orthographic***" drawings use regular graph paper (the lines go up and down); However, "***Isometric***" drawings use special graph paper which has diagonal lines. Sometimes this type of graph paper is drawn using "**solid lines**", while other times "***dots***" are used instead.

在绘制技术类图形时有几种不同类型的图纸。"正射图"图形使用的是常规图纸（直线上下移动）；但是，等距图形使用的是具有对角线的特殊图纸。有时这种类型的图纸是用实线绘制的，而有时也用"点"代替。

- Draw the "***Front***" view of the blocks using the 5mm "Orthographic" graph paper template on the upper left side.
  在左上侧的 5 毫米"正交"图纸模板中绘制"正"视图。
- Draw an "***Isometric***" view of the blocks using the 5mm "Orthographic" dot graph paper template on the upper right side.
  在右上侧的 5 毫米"正交"点图纸模板中绘制"等距"视图。

Questions 问题:

1. Are the size of all of the technical drawings the same?
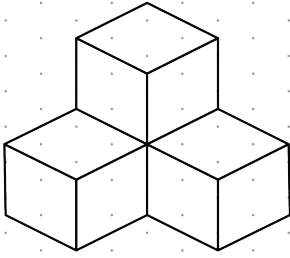   所有技术图纸的尺寸是否相同？
   _____

2. Which diagram is bigger? An "***Orthographic***" diagram or an "***Isometric***" diagram?
   哪个图表更大？正视图还是等距图？
   _____

3. Can you explain why you think one of the diagrams ends up being larger than the other even though both diagrams have been drawn using graph paper that has the same interval along the Y-axis.
   尽管两张图都是使用沿 Y 轴具有相同间隔的图表纸绘制的，你能解释为什么一张绘图比另一张绘图更大？

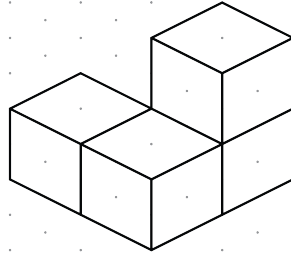   _____
   _____
   _____

Isometric Calculations 等距计算

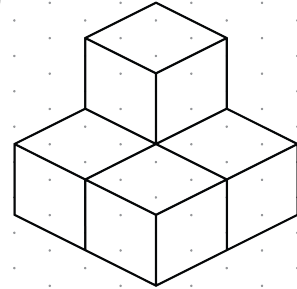4. Reproduce each "Isometric" diagram using the provided graph paper.
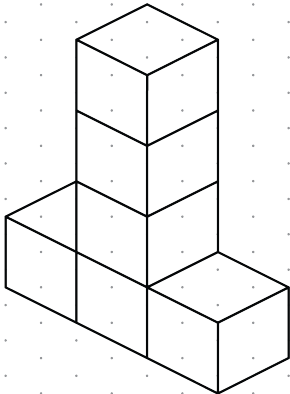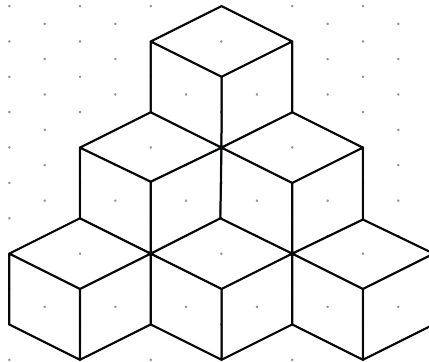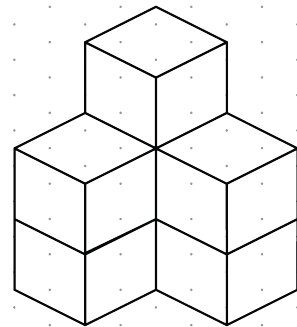   使用提供的图纸绘制每个等距图。

a)

b)

c)

d)

e)

f)

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5. Determine the surface area of each shape (NOTE: Use the grid intervals to calculate area. Do not use a standard ruler to measure an "isographic" drawing).
   计算每个图形的表面积（注：使用网格间隔计算面积，不要用直尺来测量）

   a)

   d)

   b)

   e)

   c)

   f)

6. Determine the volume of each shape.
   计算每个图形的体积。

   a)

   d)

   b)

   e)

   c)

   f)

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7. Assume that each object is a toy design that you are going to make. Determine the cost of each toy if a cubic centimetre of plastic costs 0.18RMB.
假设每个物体都是你要做的玩具设计，如果一立方厘米的塑料成本是 0.18 元人民币，请计算每个玩具的塑料成本。

   a)

   d)

   b)

   e)

   c)

   f)

8. Determine the cost painting each toy using acrylic paint if the paint cost an average of 0.09RMB per square centimetres.
如果每平方厘米的油漆成本为 0.09 元人民币，请计算每个玩具的油漆成本。

   a)

   d)

   b)

   e)

   c)

   f)