NAME: _____ _____

Page 122

How many millimetres are in 1 cm? _____

Explore

Given measurement	Object name	Actual measurement
About 25 mm		
About 80 mm		
About 250 mm		
Between 500 and 1000 mm		
Shorter than 10 mm		

What were your strategies for estimating which object would be that measurement?

What is a **referent?** (The definition is in the glossary of your textbook)

Page 124

1a)

cm	1	2	3	4	5	6	7	8	9	10	11	12
mm	10	20										

1b)

mm	1	2	3	4	5	6	7	8	9	10	11	12
cm	0.1	0.2										

1c)

m	1	2	3	4	5	6	7	8	9	10	11	12
mm	1000	2000										

2a) _____

2b) _____

2c) _____

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3a) _____ mm (3b) _____ mm (3c) _____ mm

4a) _____ cm (4b) _____ cm (4c) _____ cm

5a) _____ m (5b) _____ m (5c) _____ m

5d) _____ mm (5e) _____ mm (5f) _____ mm

6a)

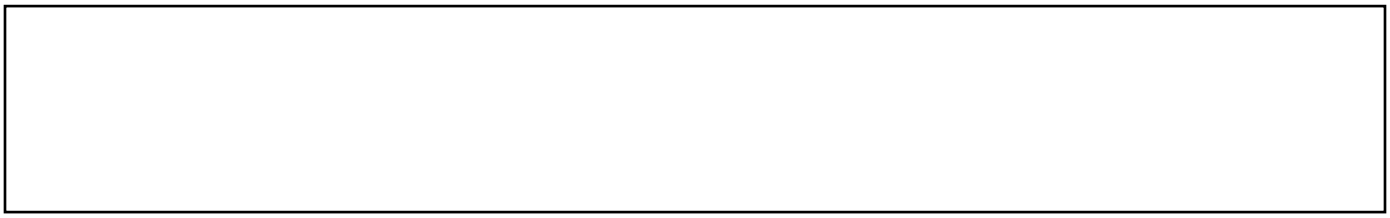
6b)

6c)

7a)

Measurement of the pencil: _____

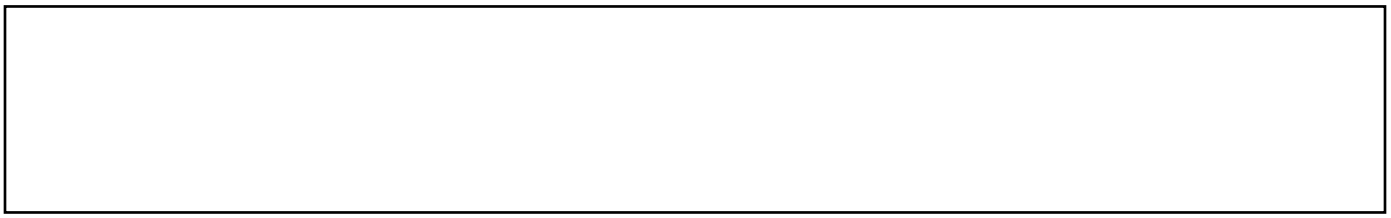
8a)



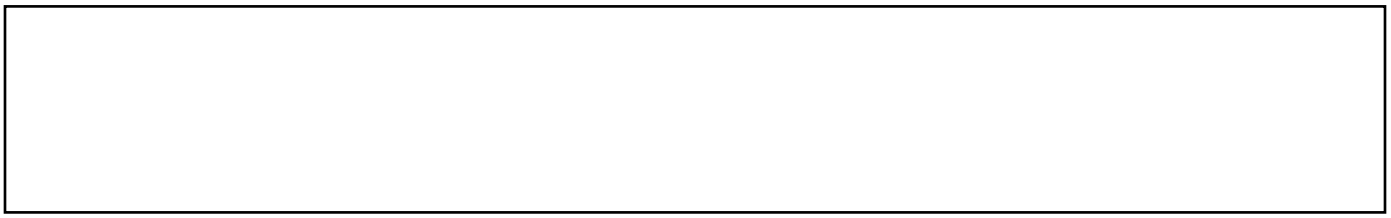
8b)

PAGE 124

8c)



8d)



9a)

9b)

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10a)

10b)

10c)

10d)

11a)

11b)

12a)

12b)

12c)

14a)

14b)

14c)

14d)

Page 125

15)

16a) Estimation = _____ Actual length = _____

16b) Estimation = _____ Actual length = _____

REFLECT

NAME: _____ _____

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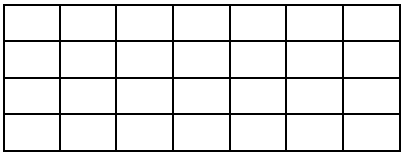


What is the perimeter of this rectangle? _____ cm

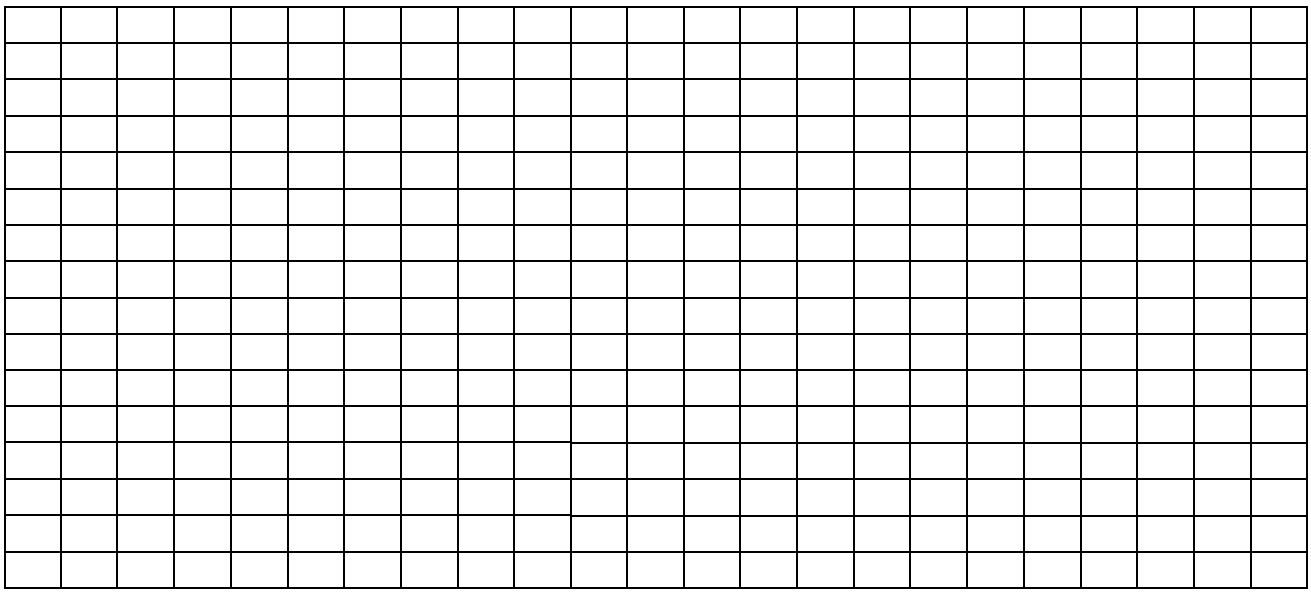
What is its area? _____ cm^2

How did you figure out its **PERIMETER?**

How did you figure out its **AREA?**

EXPLORE – p. 128

Simon wants to build a rectangular pen in his backyard for Smiley the pig. The pen will be the shape of a RECTANGLE. He was 22 metres of wire to make the fence around the pen. Simon wants to greatest possible **AREA** for the pen. The perimeter can only be as big as 22 metres because that's how much wire he has. On the graph below, draw all possible rectangles with a perimeter of 22 cm.



EXPLORE – p. 128

Length (cm)	Width (cm)	Area (cm_2)	Perimeter (cm)
1	10	10	22
2	9	18	22
3			
4			
5			
6			
7			
8			
9			
10			

Which pen has the greatest **AREA** for the pig? _____

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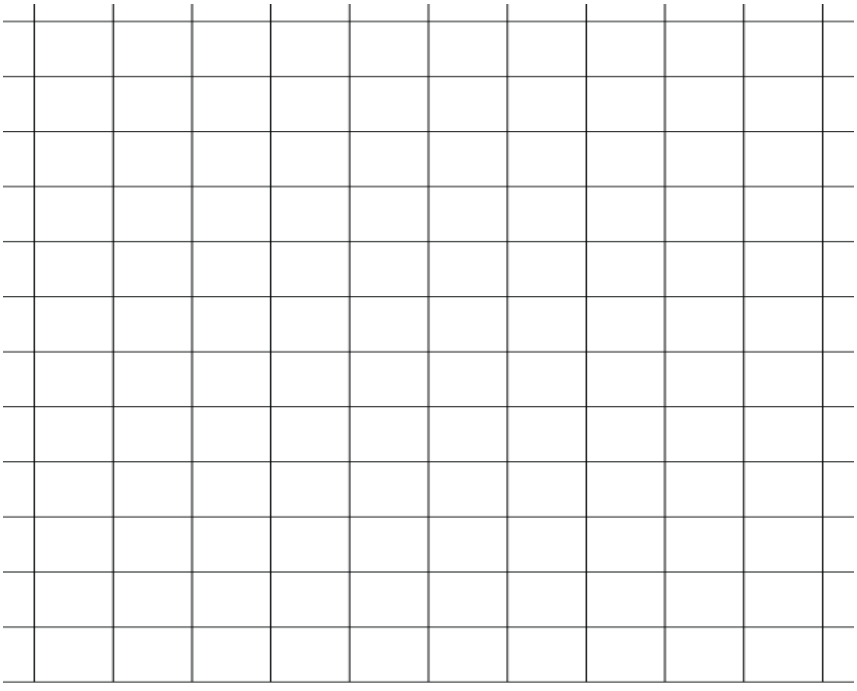
1a)



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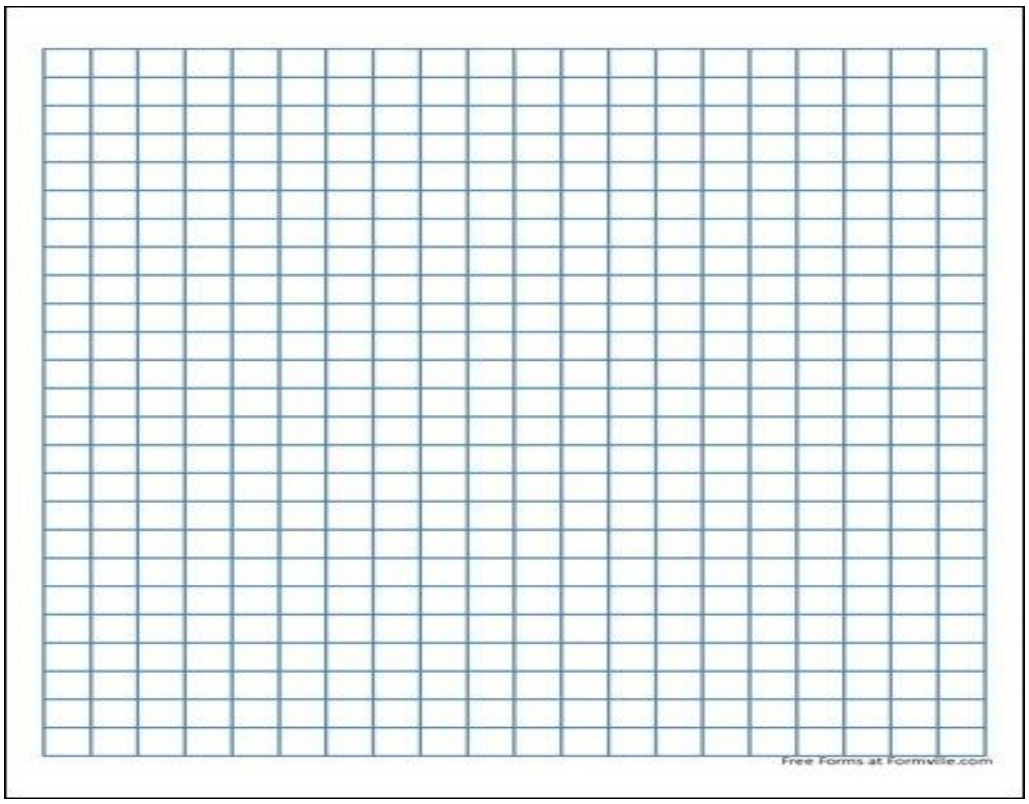
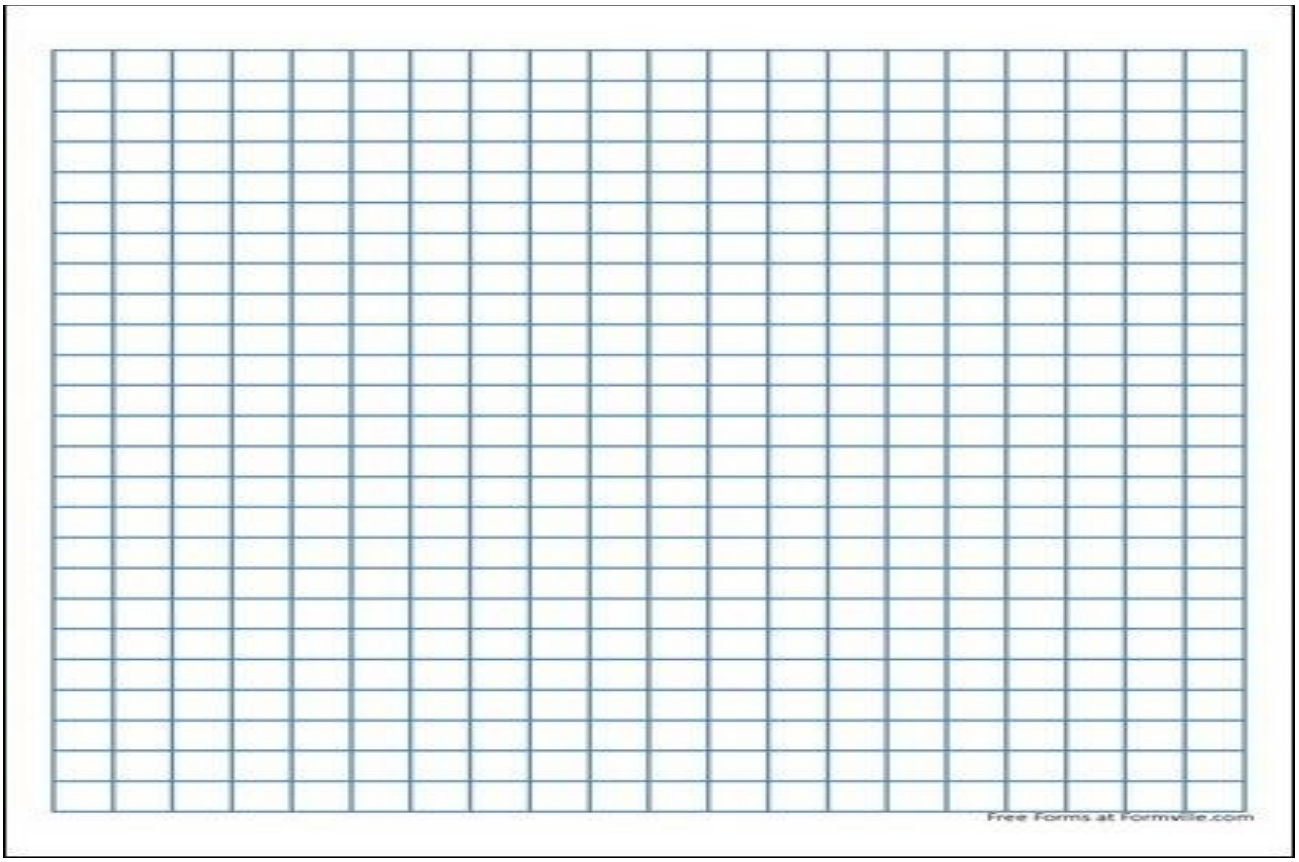
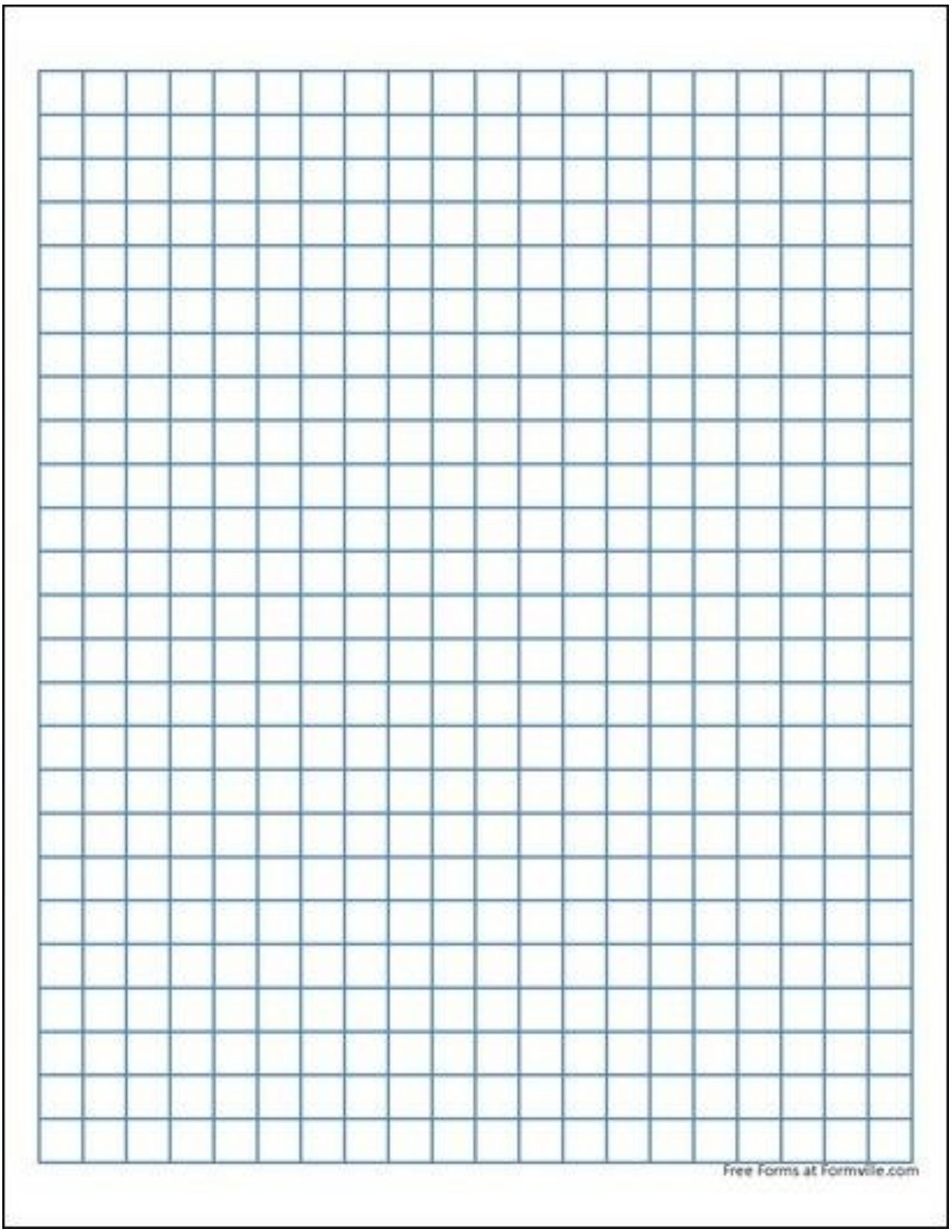
1b)



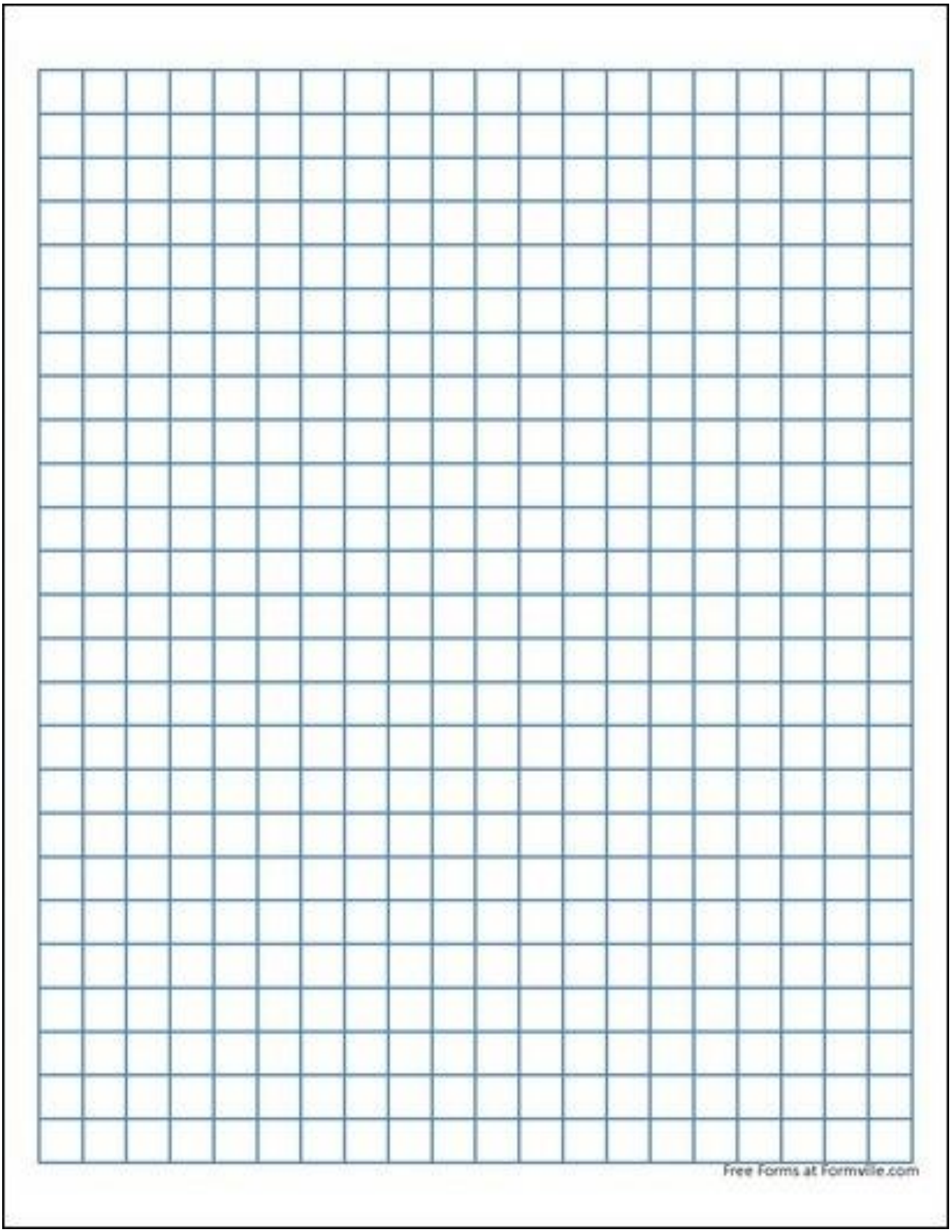
1c)



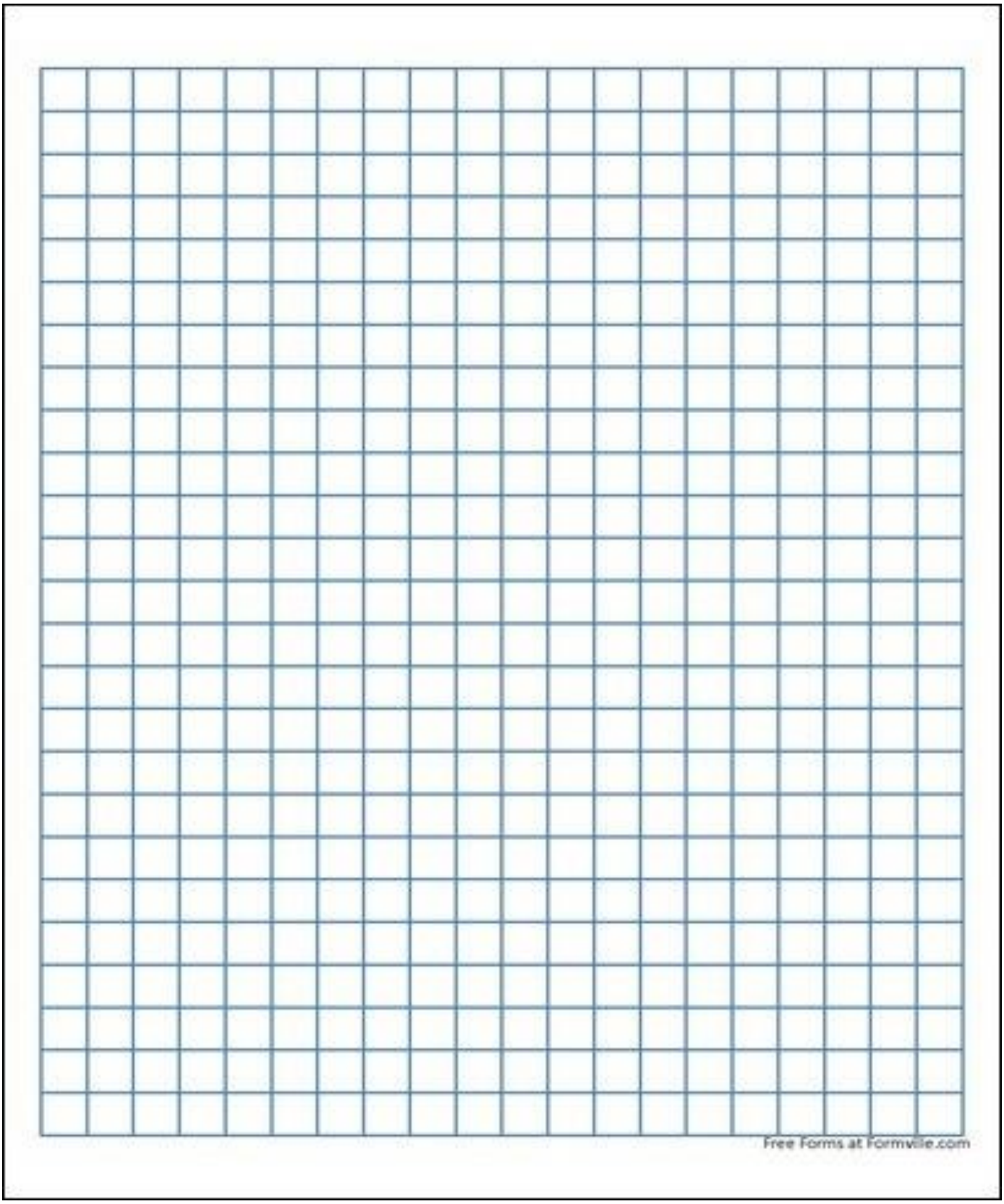
2a)



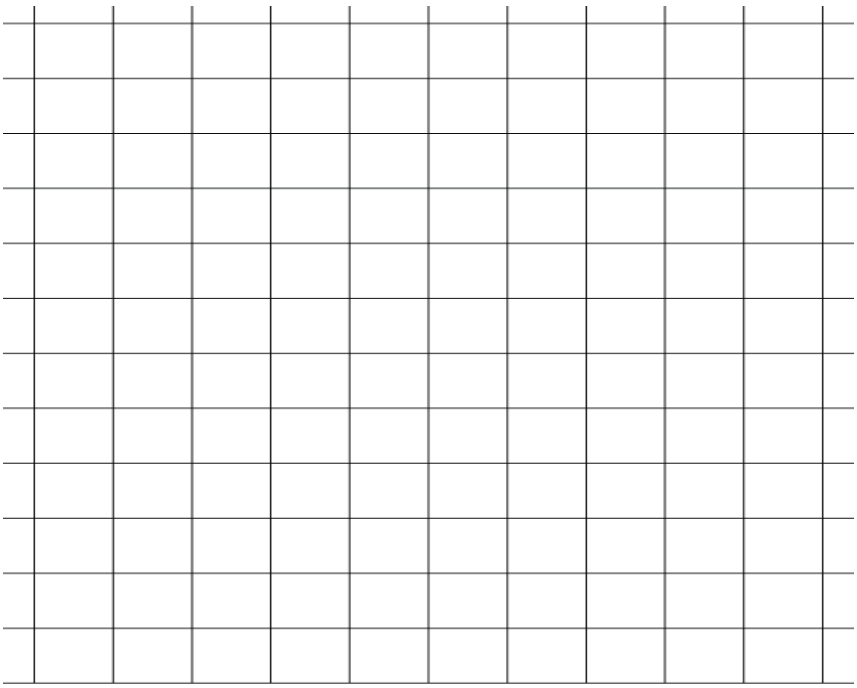
2b)



2c)



3a)



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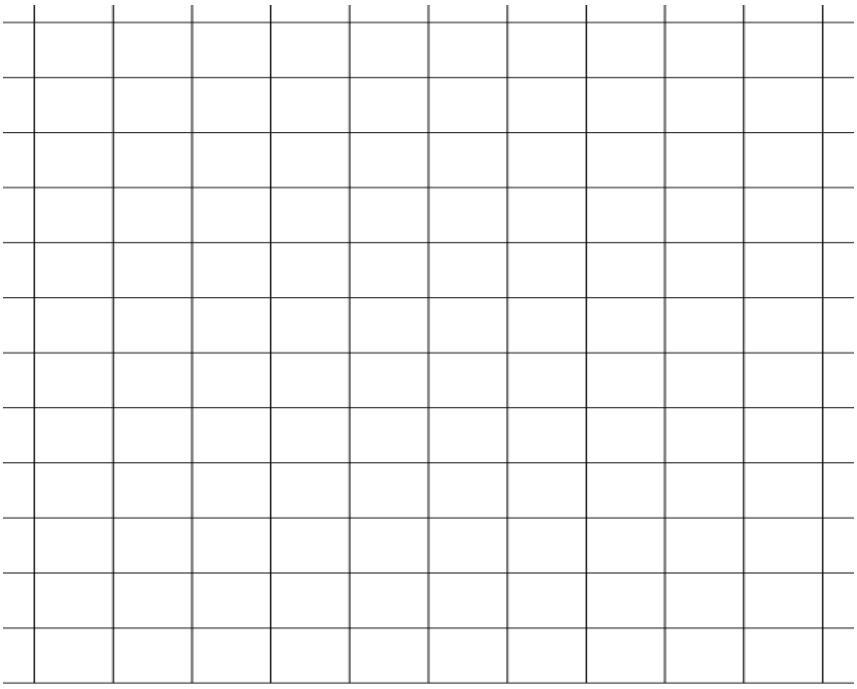
3b)



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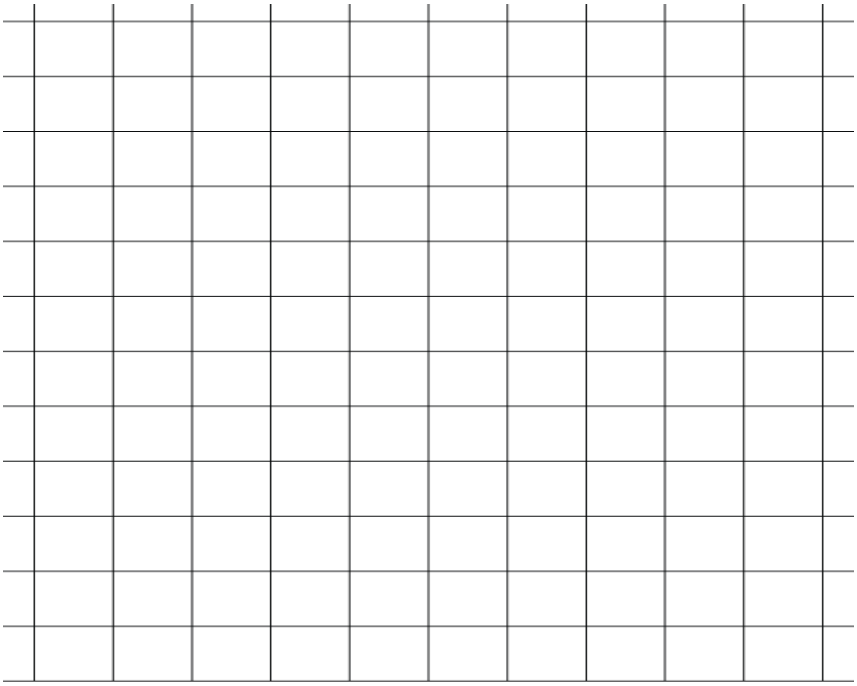
3c)



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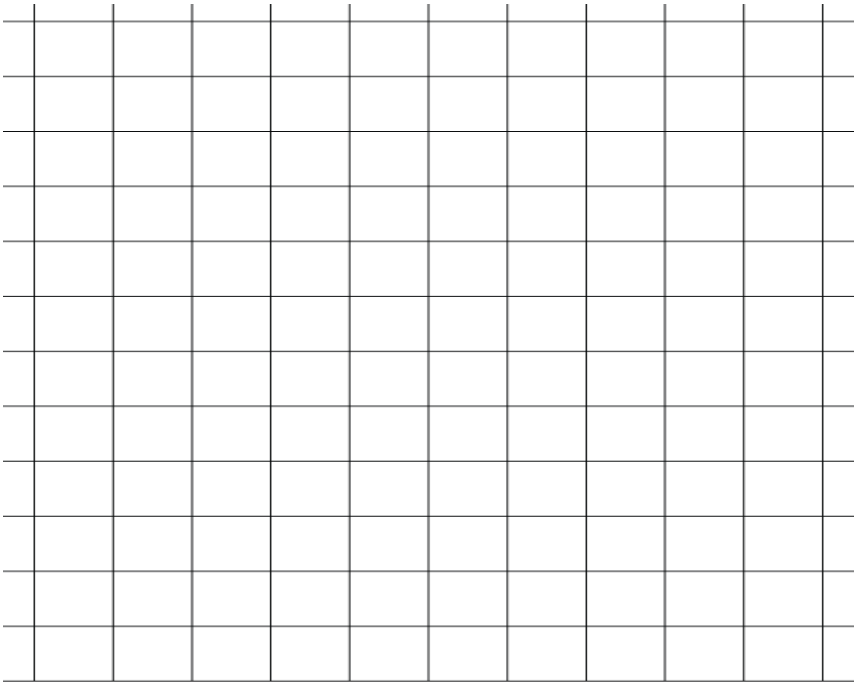
Page 130 - Lesson 3, Question 4

Suppose you want to make a rectangular garden with a perimeter of 24 m.

Step 1 Draw 3 possible gardens on the grid.

Step 2 Use a large piece of 1-cm grid paper. Draw one more garden.



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Step 3 What are the dimensions of the garden with the greatest area?

_____

Step 4 What are the dimensions of the garden you would design if you do not like garden work? Why?

_____

_____

_____

Question 5 – page 130

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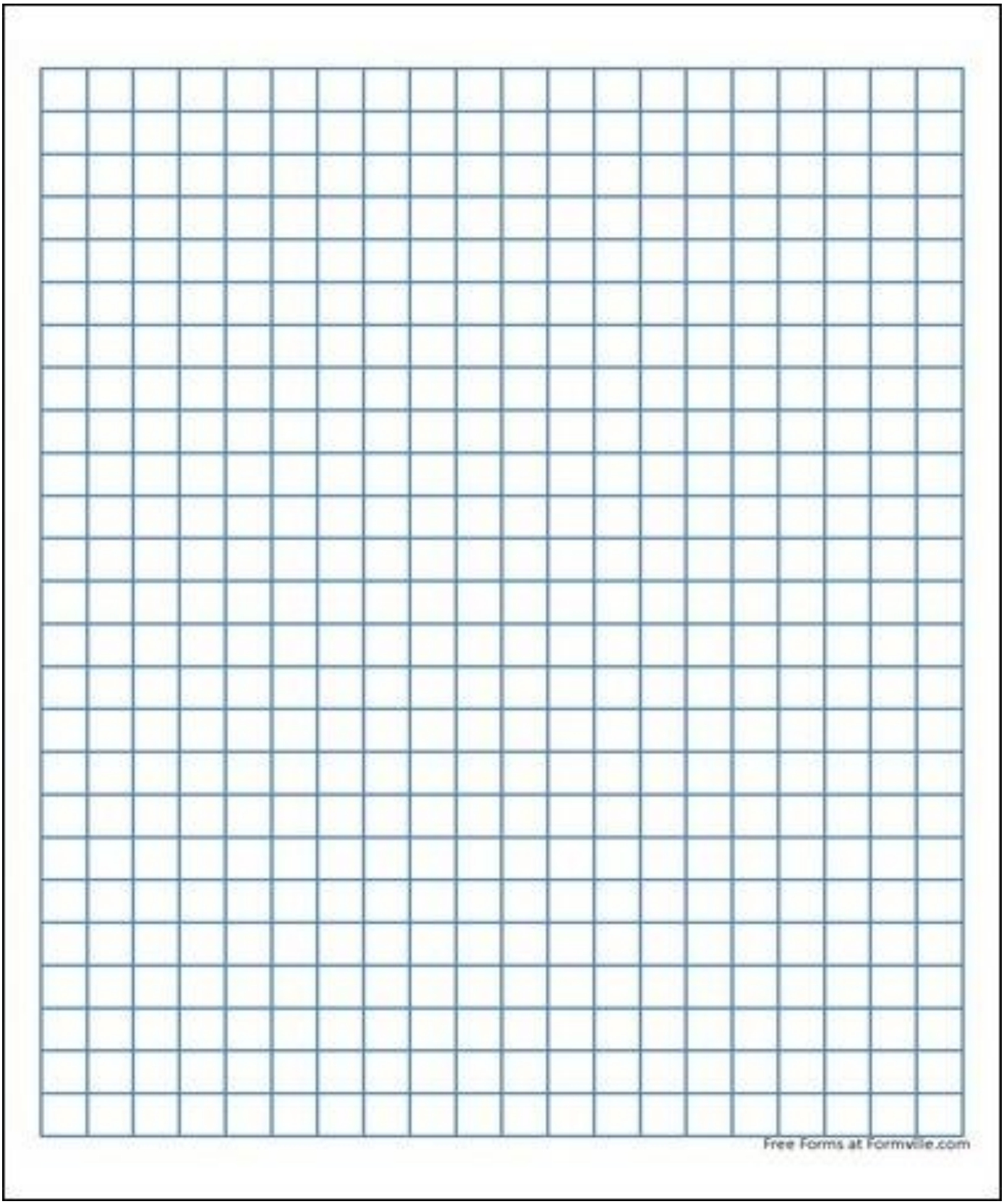
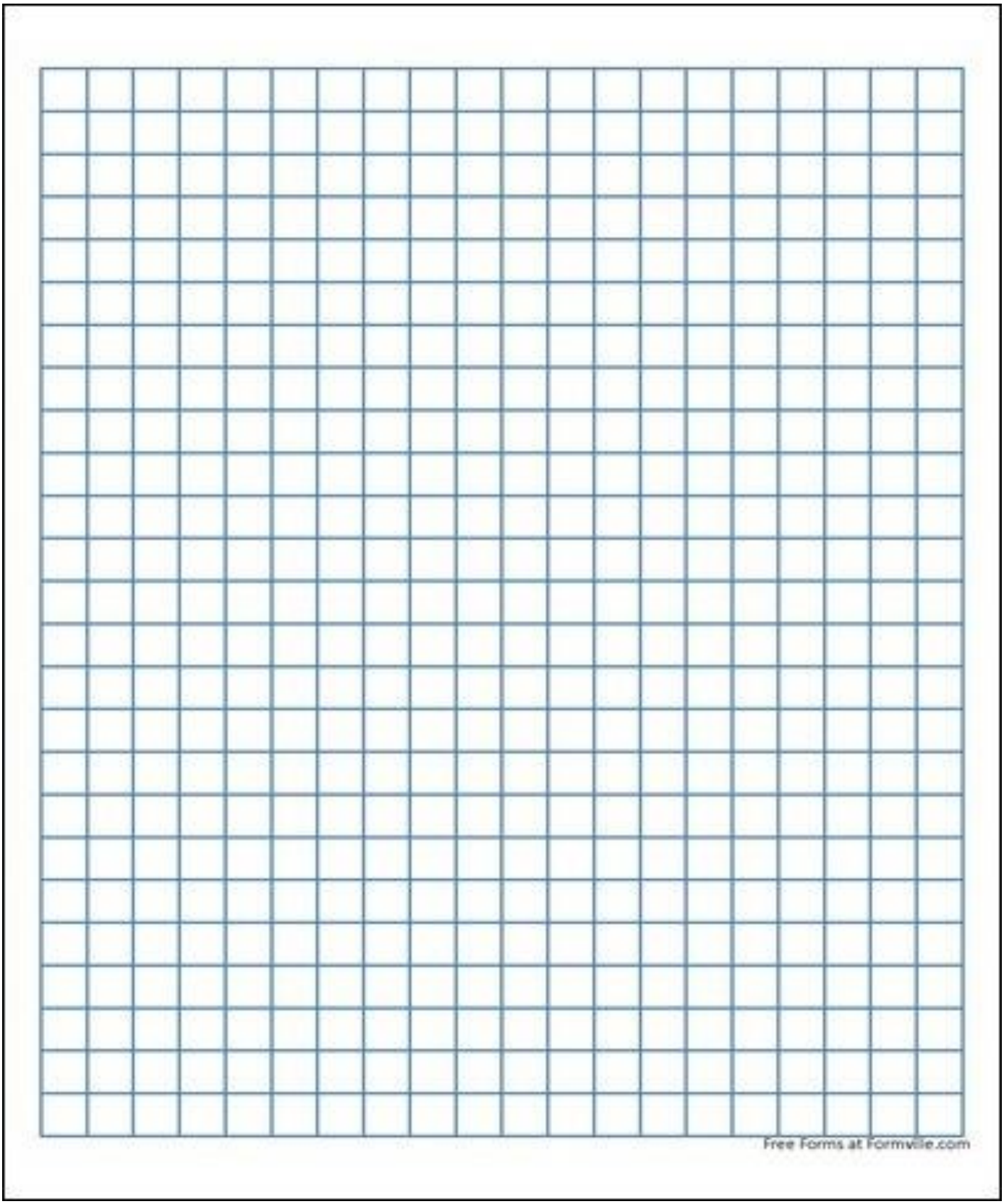
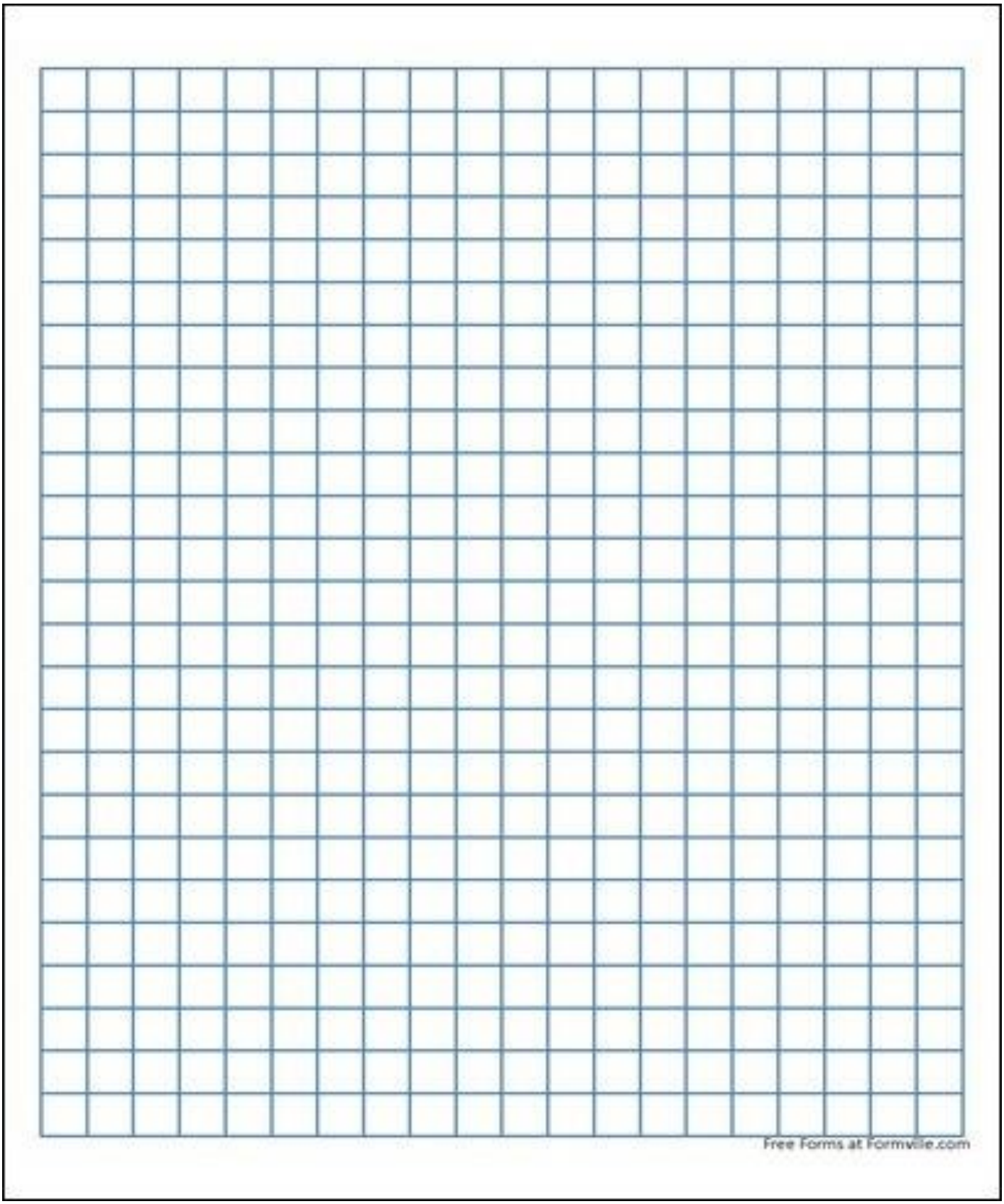
6a)



6b)

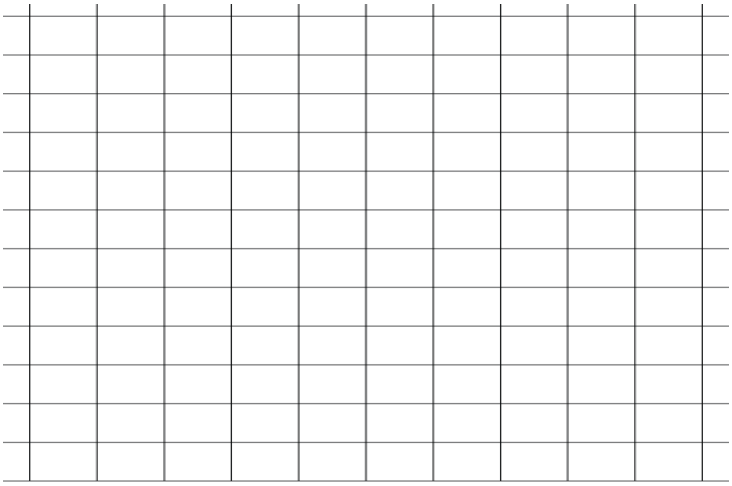


6c)


Free Forms at Formville.com

7a)

7b)



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8a)

	Length (cm)	Width (cm)
Placemat 1		
Placemat 2		
Placemat 3		
Placemat 4		
Placemat 5		
Placemat 6		

8b)

NAME: _____ _____

2a)

Length (units)	Width (units)	Perimeter (units)
48	1	98
24	2	52

2b) _____

2c) _____

_____

3) The area of a rectangular garden is 64 m_2.

Step 1

Build all the possible rectangles with an area 64 m_2. Record your results in the table.

Area (m_2)	Length (m)	Width (m)	Perimeter (m)
64	1		
64			
64			
64			
64			

Step 2 Look at the data in the table.

What is the greatest perimeter the garden could have? _____

What is the least perimeter the garden could have? _____

Step 3 Why might someone make a garden with the least perimeter?

_____

_____

_____

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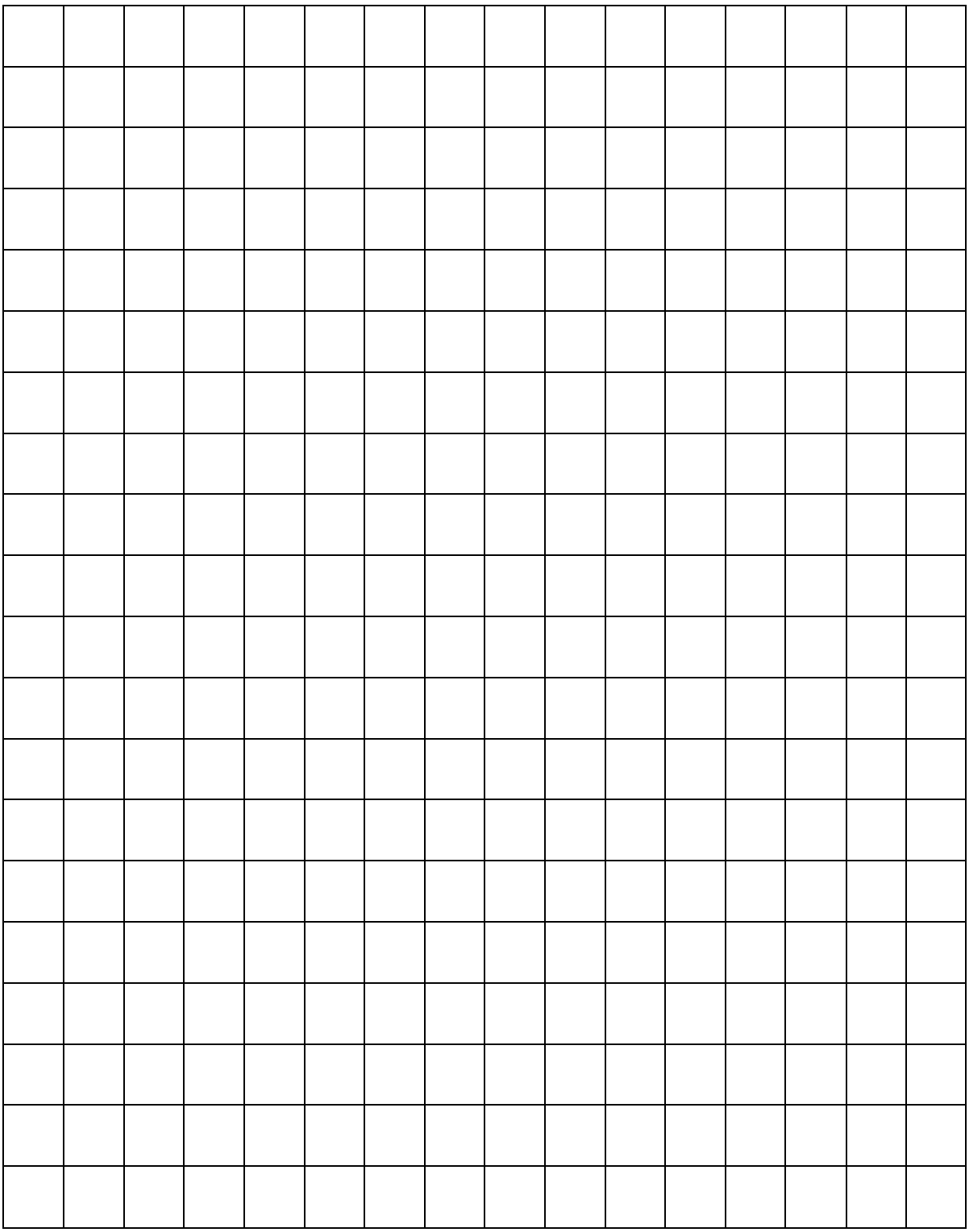
4) Label the rectangles A, B, C, and D.

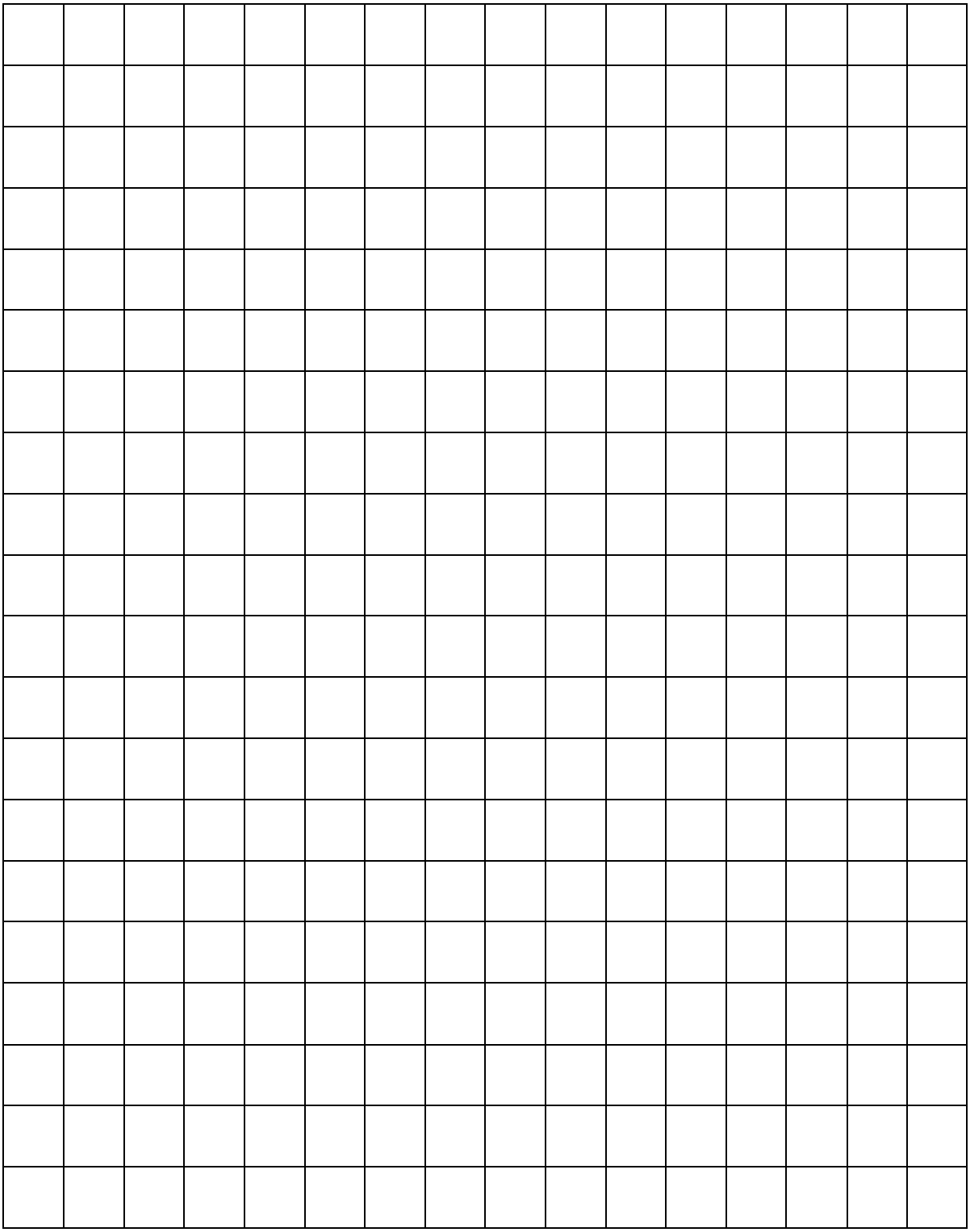


5b) You won't be able to sketch the 1 x 30 rectangle.

Length (m)	Width (m)	Perimeter	Area (m_2)
1	30	62 m	30 m_2

2			30 m_2
3			30 m_2
			30 m_2
			30 m_2

5a) Make a drawing of the rectangles on the grid below:



6)

REFLECT

Explore

1) Before you fill your first box with cubes, estimate how many it will hold. _____

2) How did you make your estimate? _____

_____

3) How many cubes did the first box hold? _____

4) Estimate how many cubes the second box will hold. _____

5) How many layers does the second box hold? _____

6) How many cubes are in each layer? _____

7) How did you find the volume without counting every cube? _____

_____

8) How did you use the grid lines on the boxes to help you find the volume? _____

_____

Read this at least twice to understand it.

What is a <u>centimetre cube?</u>

-A centimetre cube has a volume of cm^3 and there is a small 3 above cm. The cm^3 is a standard unit of volume. When we find out how many centimetre cubes will fit in a box, we are finding its volume in cubic centimetres. **Volume** measures the amount of space inside of an object.

9) What is the volume of box 1? _____

10) What is the volume of box 2? _____

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1a) _____ (1b) _____ (1c) _____

1d) _____ (1e) _____ (1f) _____

2a) _____ (2b) _____ (2c) _____

2e) _____ (2f) _____ (2g) _____

Page 140

3) _____ _____ _____ _____ _____ _____

(Don't forget to put them in order from *least* to **GREATEST**.)

Page 141

6a) _____

6b) _____

6c) _____

8) _____

_____

_____

_____

9)

Use centimetre cubes.

Step 1 Build a rectangular prism with a volume of 20 cm^3.

Your prism should be 2 cm tall.

How many cubes did you use? _____

Why? _____

How many layers does your prism have? _____

Why? _____

How many cubes are there in one layer? _____

Step 2 Record the dimensions of your prism in the table.

Volume	**Length**	**Width**	**Height**
20 cm^3			2 cm
20 cm^3			2 cm

Step 3 Build a different rectangular prism with a volume of 20 cm^3 and a height of 2 cm.

Record your results in the table.

Step 4 Can you build any other rectangular prisms with a volume of 20 cm^3 and a height of 2 cm? Explain.

_____

Page 142

Explore

Length	Width	Height	Volume
24 cm	1 cm	1 cm	24 cm^3
12 cm	1 cm	2 cm	24 cm^3
12 cm	2 cm	1 cm	24 cm^3
			24 cm^3
			24 cm^3
			24 cm^3
			24 cm^3
			24 cm^3
4 cm	3 cm	2 cm	24 cm^3
			24 cm^3
			24 cm^3
			24 cm^3

How did you know that each rectangular prism had a volume of 24 cm^3 ?

How many cubes would there be in each layer if the prism had 2 layers? _____

How many cubes would there be in each layer if the prism had 3 layers? _____

How many cubes would there be in each layer if the prism had 4 layers? _____

How many cubes would there be in each layer if the prism had 6 layers? _____

How many cubes would there be in each layer if the prism had 8 layers? _____

How many cubes would there be in each layer if the prism had 12 layers? _____

Is there more than one way to build a prism of 24 cm^3 with only 1 layer?

What strategy did you use to find all the possible rectangular prisms?

Page 143

1a) _____ (1b) _____ (1c) _____

2)

	Length	Width	Height	Volume
a				9 cm^3
b				36 cm^3
c				13 cm^3
d				15 cm^3

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3)

Length	Width	Height	Volume
			16 cm^3
			16 cm^3
			16 cm^3
			16 cm^3

4)

	Length	Width	Height	Volume
a	8	3	2	cm^3
b	3	4	2	cm^3
c	7	3	1	cm^3

5a) _____ cm x _____ cm x _____cm = 18 cm^3

_____ cm x _____ cm x _____cm = 18 cm^3

_____ cm x _____ cm x _____cm = 18 cm^3

_____ cm x _____ cm x _____cm = 18 cm^3

_____ cm x _____ cm x _____cm = 18 cm^3

5a) _____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

_____ cm x _____ cm x _____cm = 36 cm^3

Page 144 – Question 6

Step 1 Record the volume of 1 centimetre cube in the table below.

Step 2 Build the next biggest cube and record its volume.

Step 3 Continue building bigger and bigger cubes from the centimetre cubes. Record the dimensions and volume of each one in the table.

Length (cm)	Width (cm)	Height (cm)	Volume (cm3)
1	1	1	
2	2	2	
3			
4			
5			

Step 4 How many cubes larger than 1 cm3 can you make from 100 centimetre cubes? _____

Step 5 What patterns do you see in the table? _____

_____

7a) _____ cm x _____ cm x _____ cm

_____ cm x _____ cm x _____ cm

7b) _____ cm x _____ cm x _____ cm

8a) _____ (8b) _____ cm x _____ cm x _____ cm

REFLECT

Page 145

Explore

About how many cubes would it take to fill up your classroom? Explain your estimate.

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Remember, a *referent* is something that you use in order to measure something else.

1a)

1b) Telephone booth = _____

1b) Your bedroom = _____

1b) An elevator = _____

2a) _____ (2b) _____

2c) _____ (2d) _____

3a) _____ (3b) _____

3c) _____ (3d) _____

4a) _____ (4b) _____ (4c) _____

4d) _____ (4e) _____(4f) _____

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5) To help answer the question,

Use centimetre cubes. Let each cube represent 1 m_3.

Build 4 layers with 12 cubes in each layer.

What is the volume of 1 layer? _____

What is the volume of 4 layers? _____

What is the volume of the stack of crates? _____

How many rows of cubes are in each layer? _____

How many cubes are in each row? _____

REFLECT

Page 158

1)

Measurement unit	*Length*	*Width*	*Height*
millimetres			
centimetres			
metres			

2a)

2b)

2c)

3a) _____ 3b) _____ 3c) _____ 3d) _____ 3e) _____ 3f) _____

6a) _____

6b)

6c)

Page 158

8a) _____ (8b) _____ (8c)_____

Page 159

9a) _____ (9b) _____ (9c)_____

10)

	Length	*Width*	*Height*	*Volume*
A				12 cm^3
B				24 cm^3
C				11 cm^3

11)

Length	*Width*	*Height*	*Volume*
1	1	18	18 cm^3
18	1	1	18 cm^3
1	18	1	18 cm^3
2	3	3	18 cm^3
3	2	3	18 cm^3
3	3	2	18 cm^3

13a) _____ (13b) _____ 13c) _____ (13d) _____

14) _____ _____ _____ _____