THINKING 3B MATHEMATICS WORKBOOK 2

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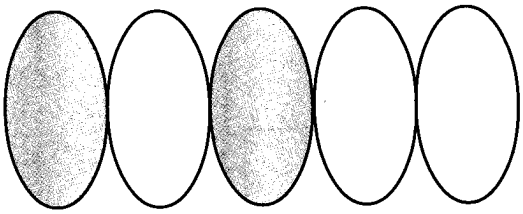
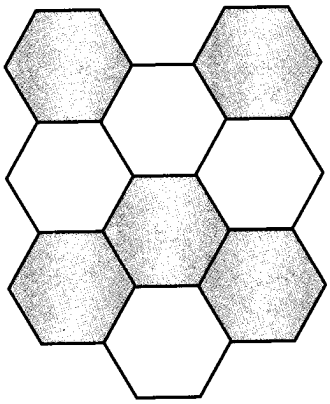
Contents

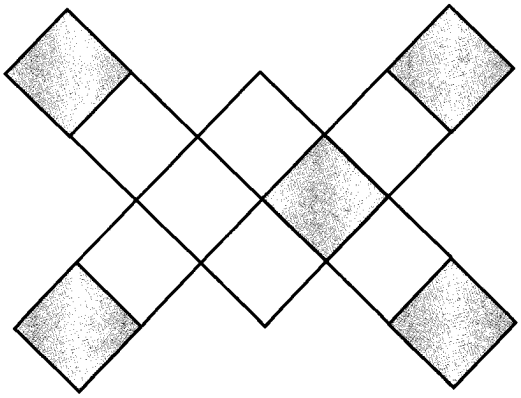
Fractions

Exercise one

1. What fraction of the figure is shaded?

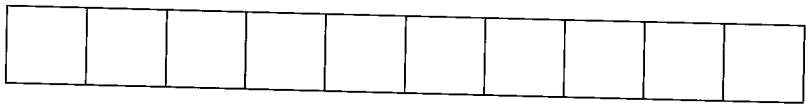






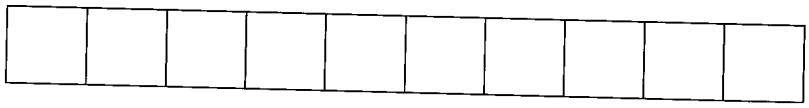
2. Shade the square(s) on each bar to show the given fraction. Write each fraction as shown in part (a).

(a)



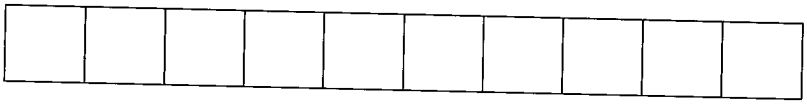
1 tenth $\frac{1}{10}$

(b)



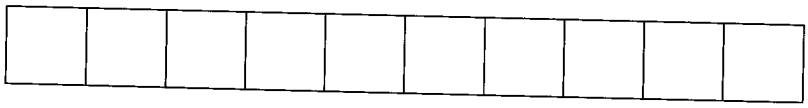
3 tenths

(c)



7 tenths

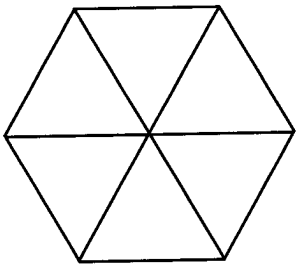
(d)



10 tenths

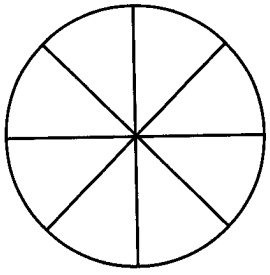
3. Shade each shape to represent the given fraction. Write the fraction in the box to show the numerator and denominator.

(a)



2 sixths

(b)



7 eigths

4. Write the numerator of each given fraction.

(a) $\frac{1}{3}$ _____

(b) $\frac{2}{5}$ _____

(c) $\frac{4}{6}$ _____

5. Write the denominator of each given fraction.

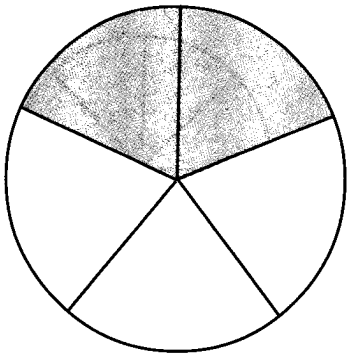
(a) $\frac{2}{8}$ →

(b) $\frac{3}{7}$ →

(c) $\frac{4}{5}$ →

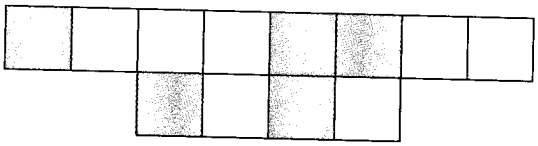
6. What fraction of each figure is shaded? What is the numerator and denominator of each fraction?

(a)



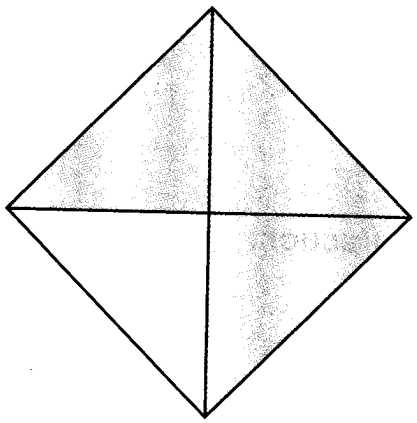
Fraction	
Numerator	
Denominator	

(b)



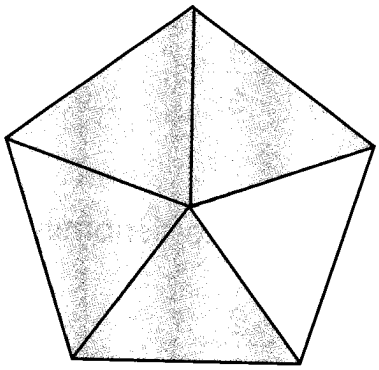
Fraction	
Numerator	
Denominator	

(c)



Fraction	
Numerator	
Denominator	

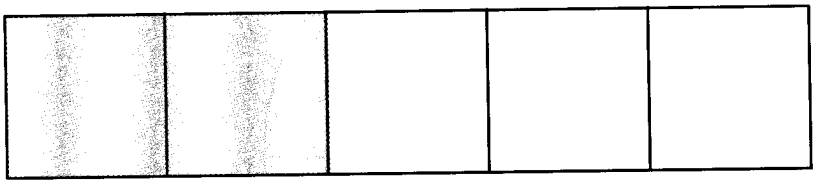
(d)



Fraction	
Numerator	
Denominator	

7. Look at the figures. Fill in the blanks.

(a)



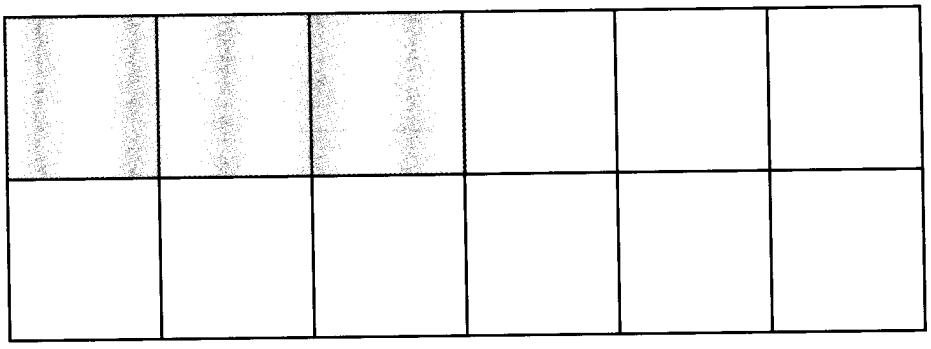
1 whole = _____ fifths.

_____ parts are shaded.

_____ parts are not shaded.

The fraction shaded is _____.

(b)



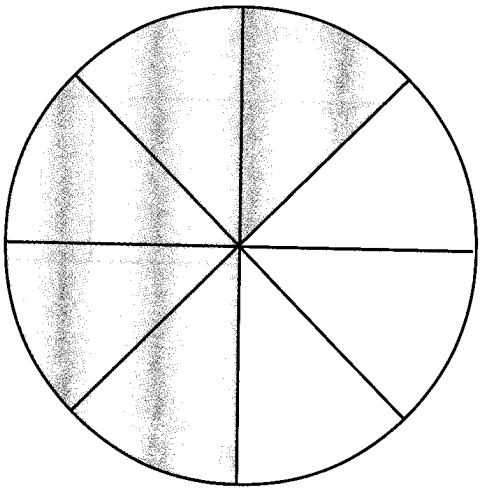
1 whole = _____ twelfths.

_____ parts are shaded.

_____ parts are not shaded.

The fraction shaded is _____.

(c)



1 whole = _____ eighths.

_____ parts are shaded.

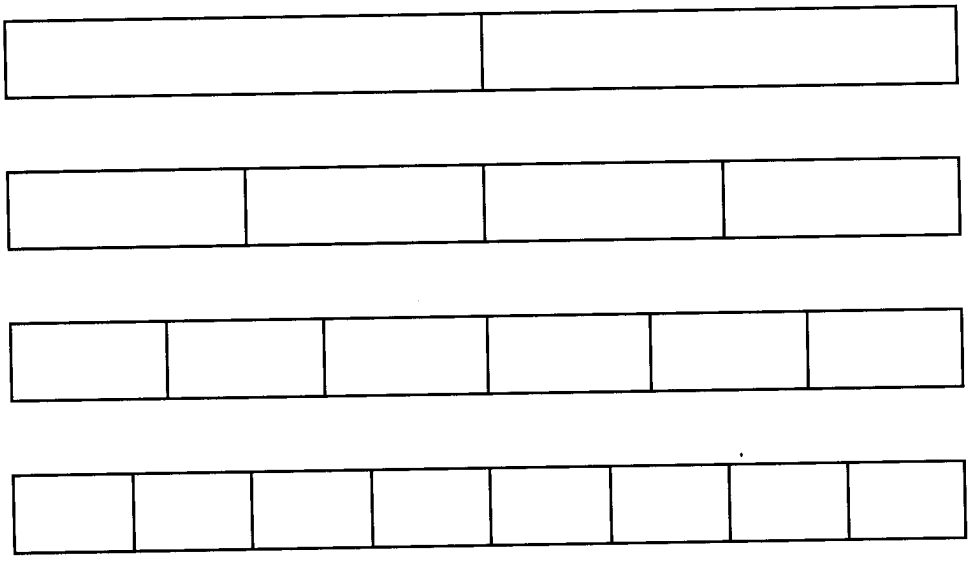
_____ parts are not shaded.

The fraction shaded is _____.

Exercise two

1. Shade to show the equivalent fractions.

(a)



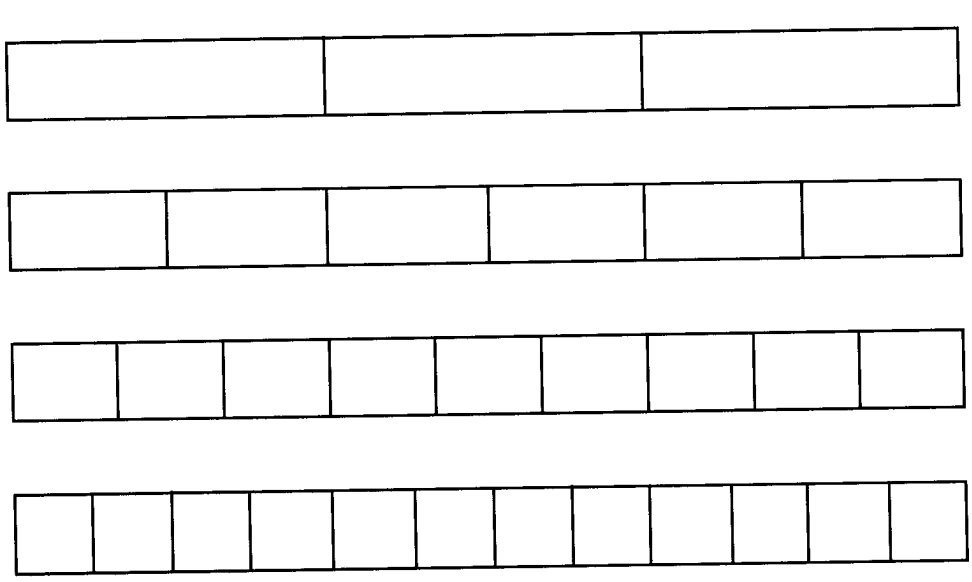
$\frac{1}{2}$

$\frac{2}{4}$

$\frac{3}{6}$

$\frac{4}{8}$

(b)



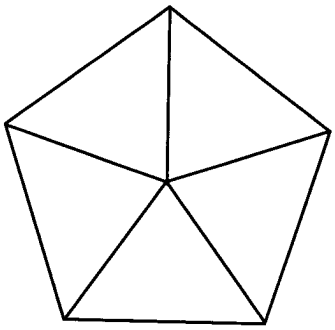
$\frac{1}{3}$

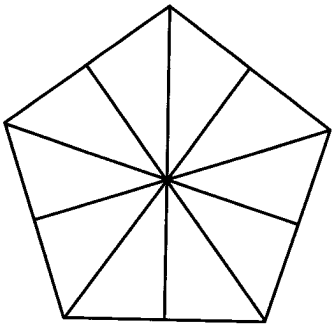
$\frac{2}{6}$

$\frac{3}{9}$

$\frac{4}{12}$

(c)

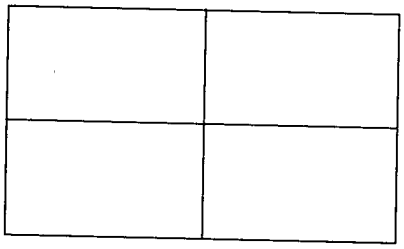


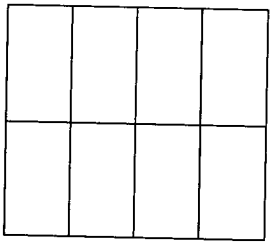


(d)

$\frac{2}{5}$

$\frac{4}{10}$

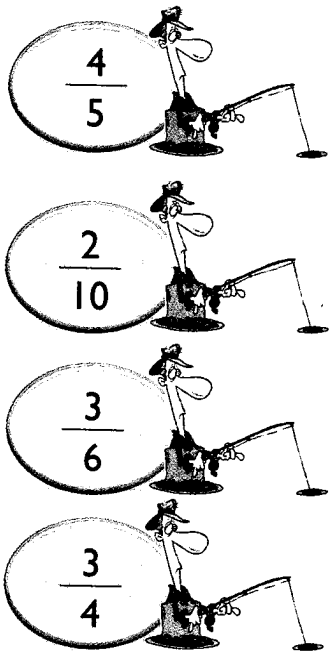


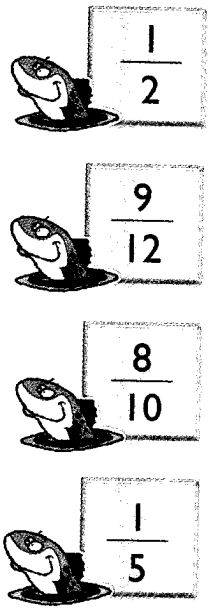


$\frac{3}{4}$

$\frac{6}{8}$

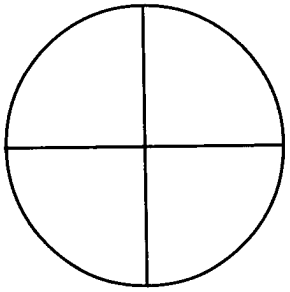
2. Match the following.



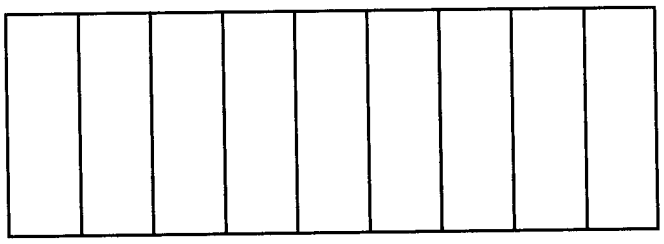


3. Shade to show equivalent fractions. Write the equivalent fraction.

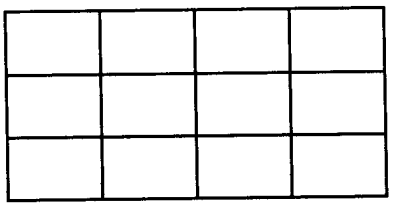
(a) $\frac{1}{2} = \frac{\square}{\square}$



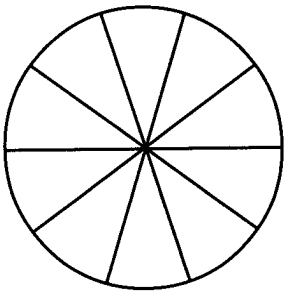
(b) $\frac{2}{3} = \frac{\square}{\square}$



(c) $\frac{3}{4} = \frac{\square}{\square}$



(d) $\frac{4}{5} = \frac{\square}{\square}$



4. Fill in the numerators or denominators to complete the equivalent fractions.

(a) $\frac{1}{2} = \frac{\square}{8}$

(b) $\frac{6}{12} = \frac{\square}{4}$

(c) $\frac{2}{3} = \frac{8}{\square}$

(d) $\frac{2}{10} = \frac{1}{\square}$

(e) $\frac{4}{5} = \frac{\square}{10}$

(f) $\frac{8}{12} = \frac{4}{\square}$

5. Fill in the missing numerators or denominators to complete the equivalent fractions.

(a) $\frac{5}{10} = \frac{1}{\square} = \frac{\square}{6}$

(b) $\frac{4}{\square} = \frac{3}{9} = \frac{\square}{3}$

(e) $\frac{\square}{8} = \frac{3}{\square} = \frac{9}{12}$

6. Write each fraction in its simplest form.

(a) $\frac{6}{12} = \square$

(b) $\frac{6}{9} = \square$

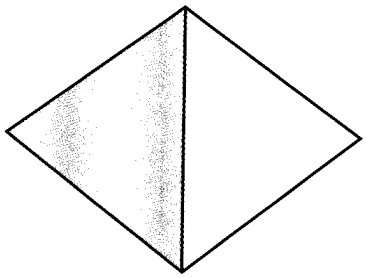
(c) $\frac{4}{8} = \square$

(d) $\frac{8}{12} = \square$

Exercise three

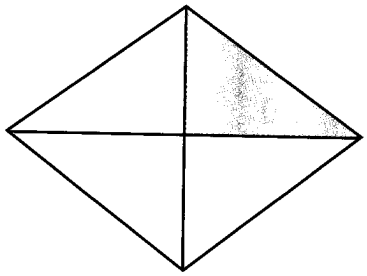
1. Circle the larger fraction.

(a)



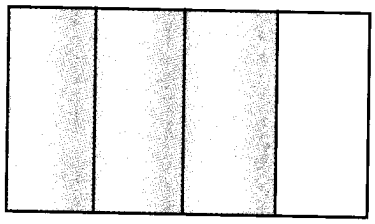
$\frac{1}{2}$

or



$\frac{1}{4}$

(b)

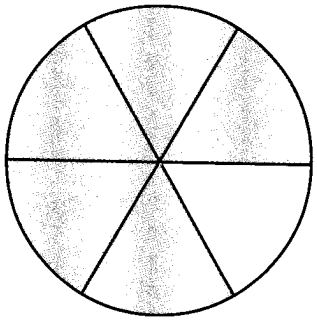


$\frac{3}{4}$

or

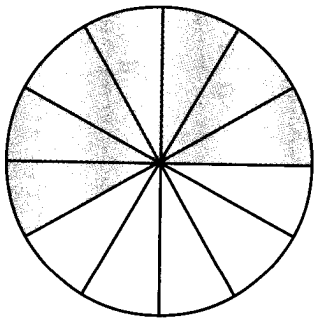
$\frac{7}{8}$

(c)



$\frac{5}{6}$

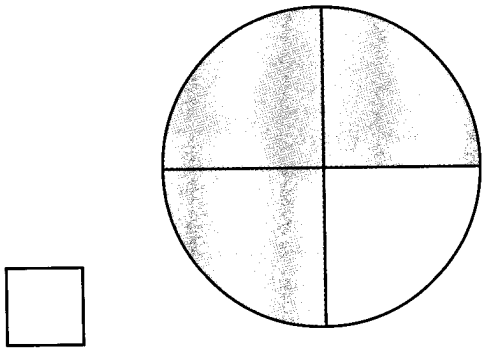
or



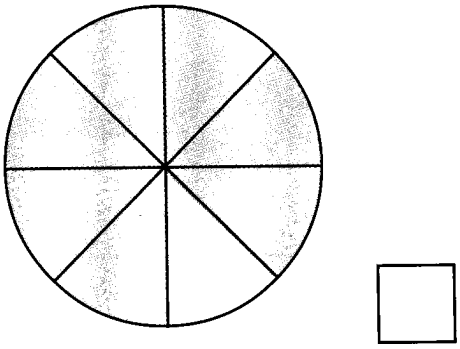
$\frac{7}{12}$

2. What fraction of each figure is shaded? Tick the larger fraction.

(a)

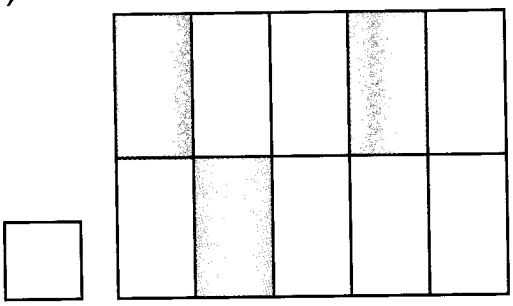


The fraction is _____.

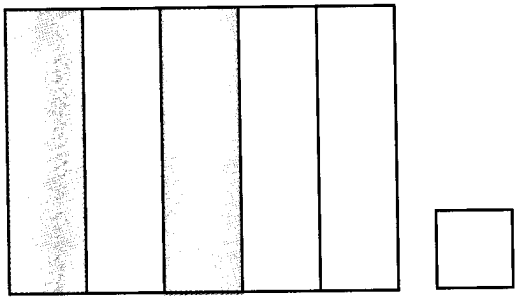


The fraction is _____.

(b)

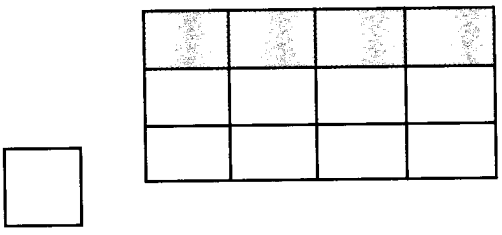


The fraction is _____.

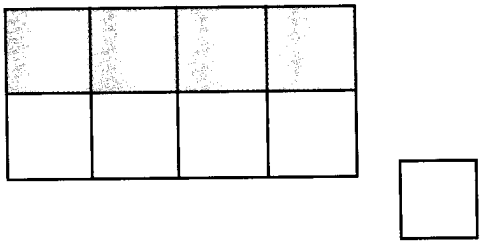


The fraction is _____.

(c)



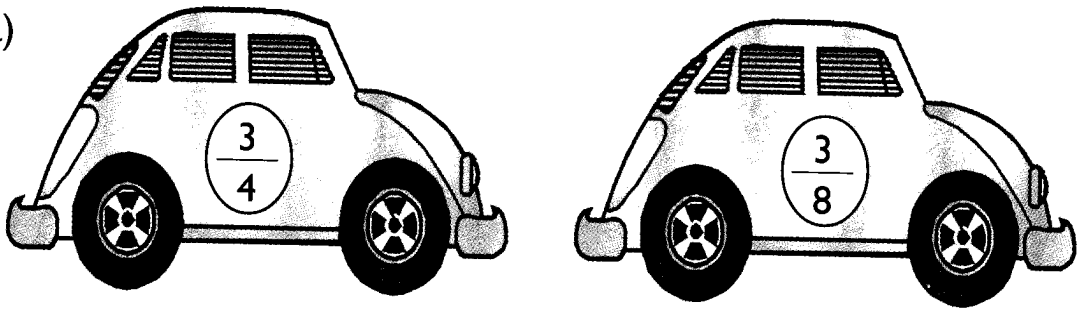
The fraction is _____.



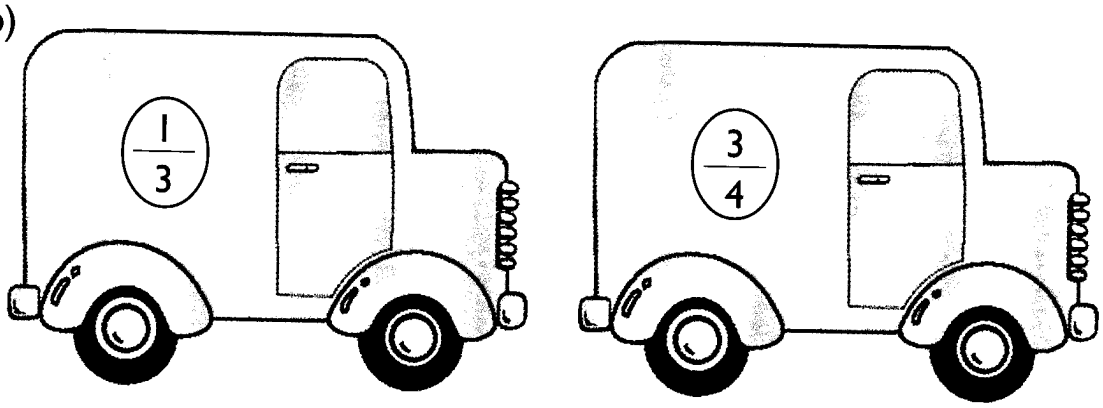
The fraction is _____.

3. Cross out the vehicle with the smaller fraction.

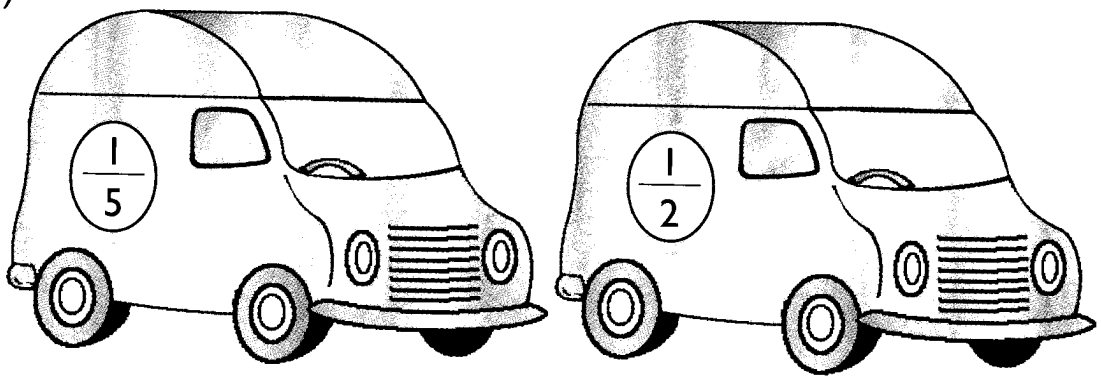
(a)



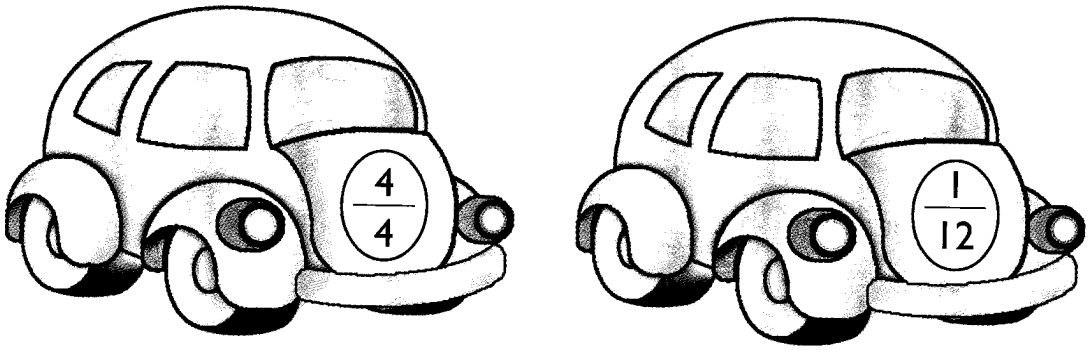
(b)



(c)

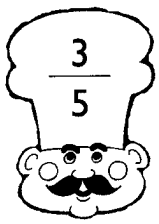


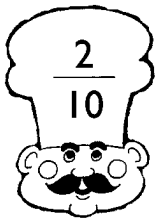
(d)



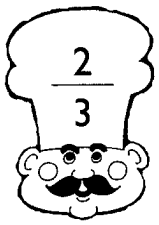
4. Circle the larger fraction.

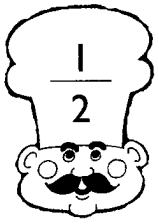
(a)





(b)





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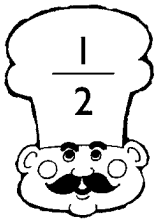
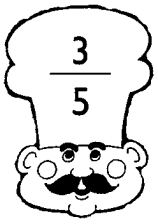


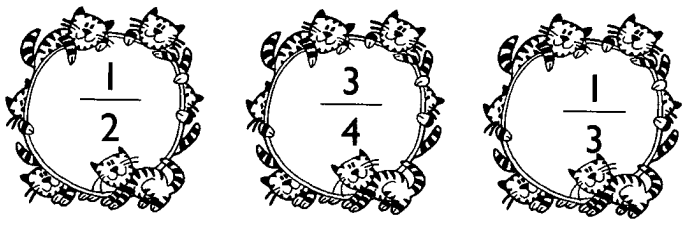


5. Arrange these fractions in order. Begin with the largest.

(a)

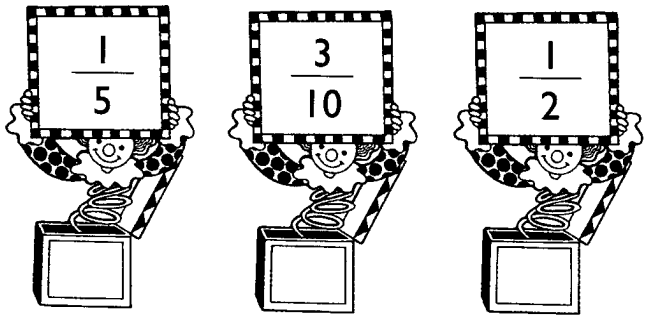
_____, _____, _____

(b)



_____, _____, _____

(c)



_____, _____, _____

6. Arrange these fractions in order. Begin with the smallest fraction.

(a) $\frac{5}{7}, \frac{4}{7}, \frac{3}{7}$: _____, _____, _____.

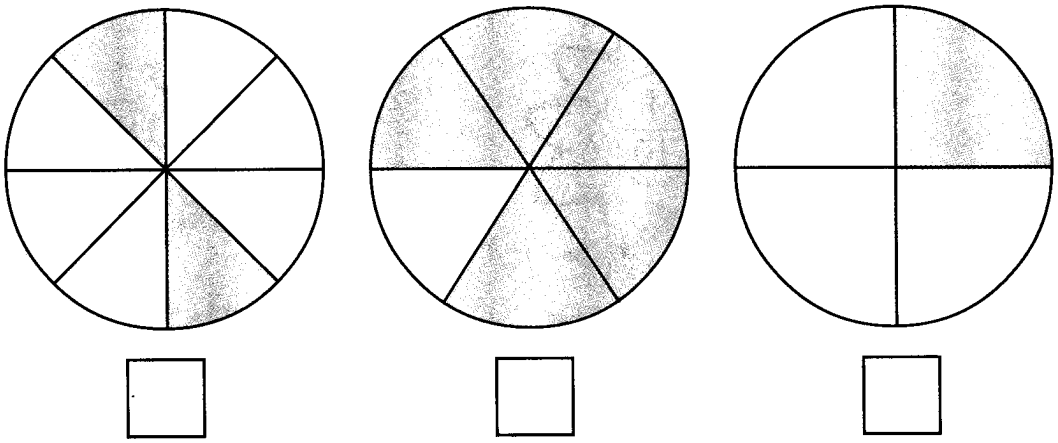
(b) $\frac{2}{3}, \frac{8}{9}, \frac{3}{3}$: _____, _____, _____.

(c) $\frac{2}{5}, \frac{1}{2}, \frac{1}{10}$: _____, _____, _____.

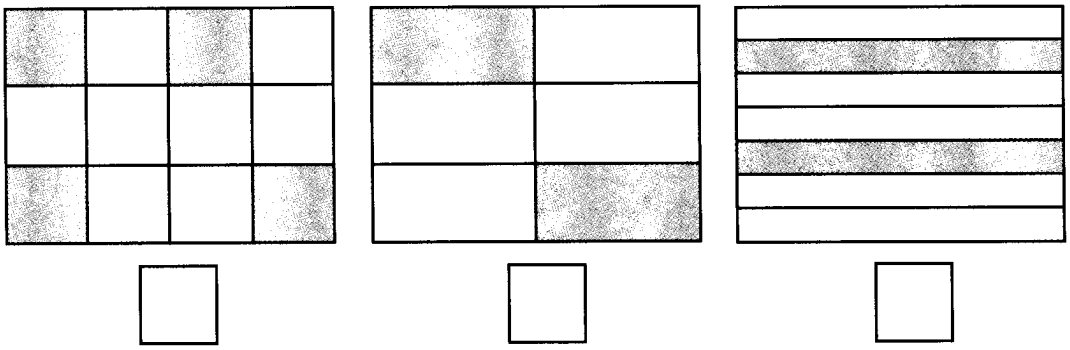
(d) $\frac{1}{3}, \frac{2}{9}, \frac{3}{12}$: _____, _____, _____.

7. What fraction of each figure is shaded? Tick the fraction in each set that is not equivalent to the rest.

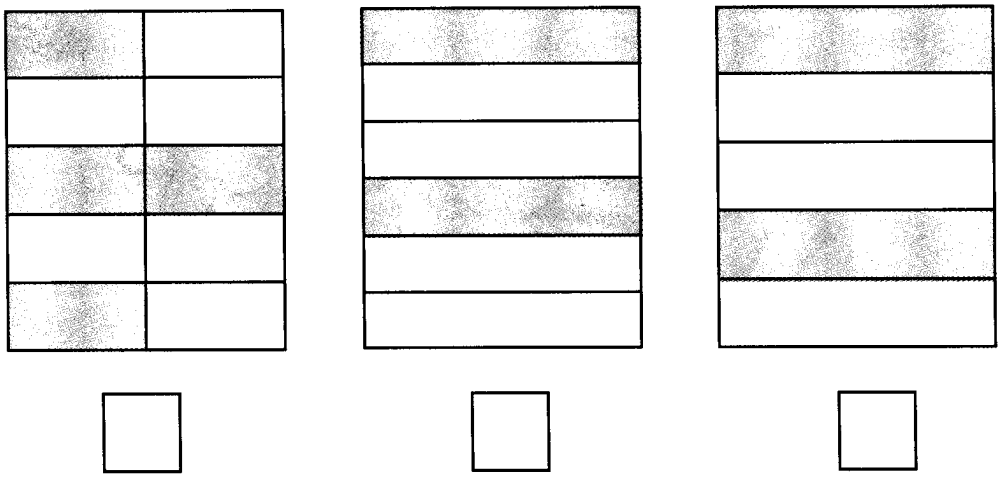
(a)



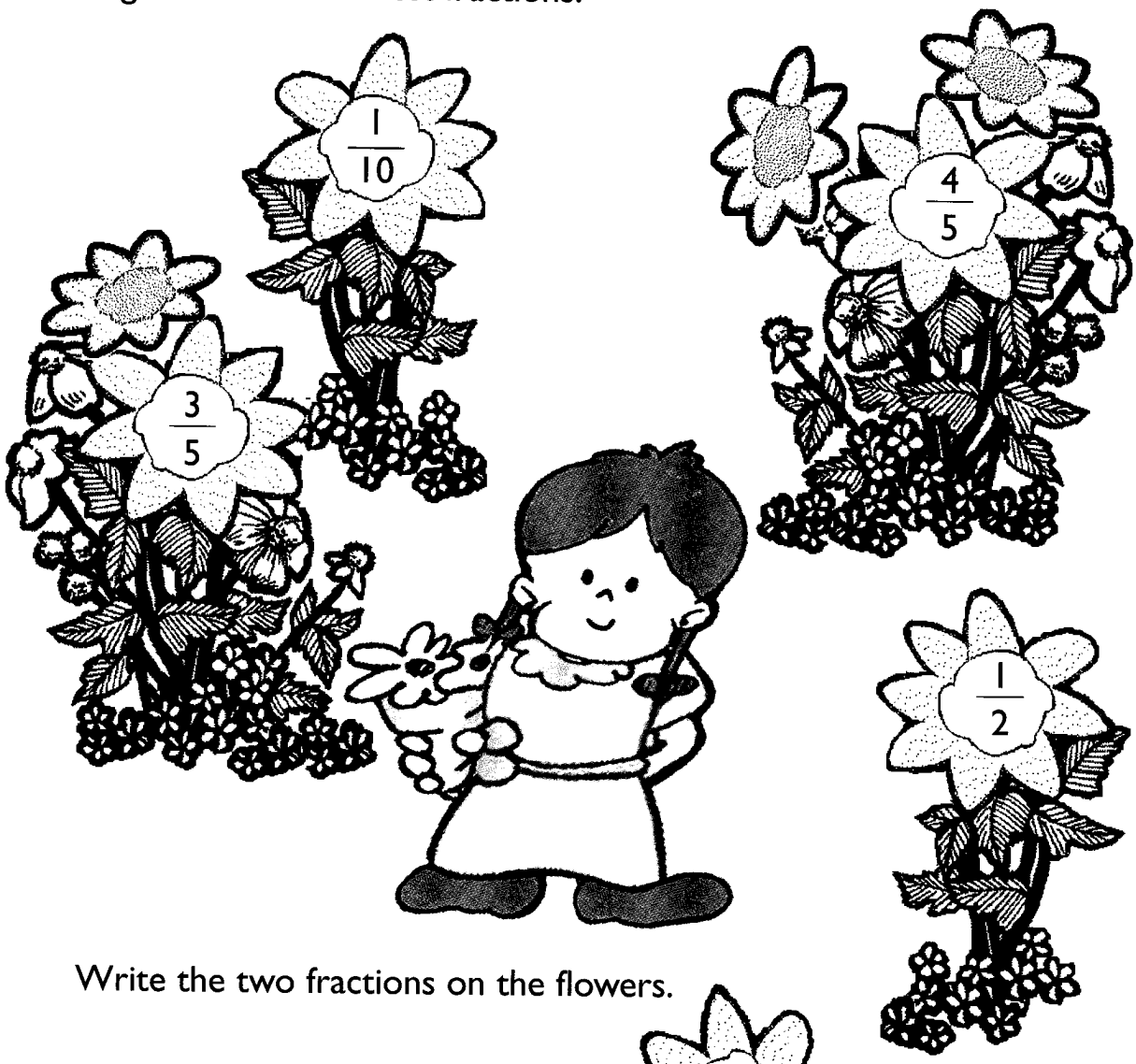
(b)



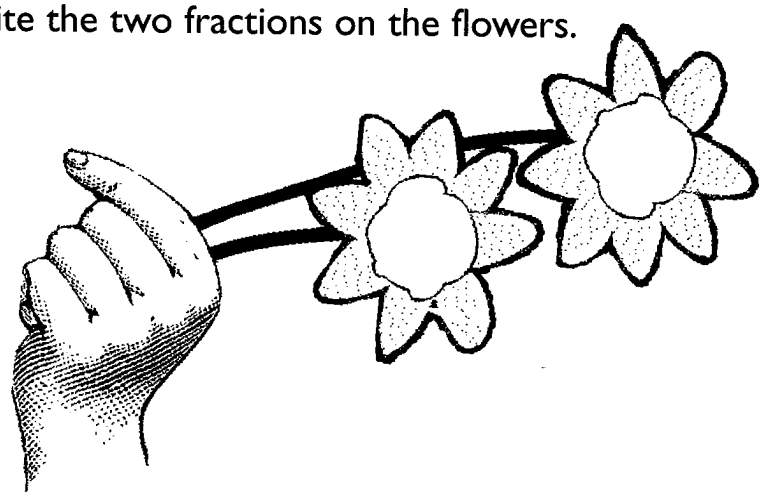
(c)



8. Mary is off to visit her grandmother. Before leaving, Mary wishes to pick some flowers for her. Help Mary choose two flowers with the largest and the smallest fractions.



Write the two fractions on the flowers.

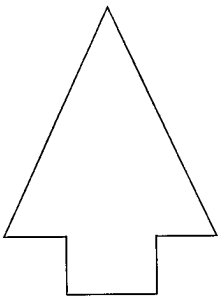


Geometry

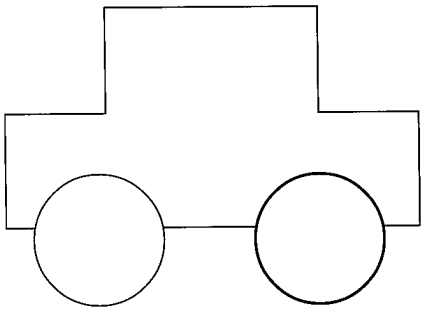
Exercise one

1. Mark all the right angles shown in the figures.

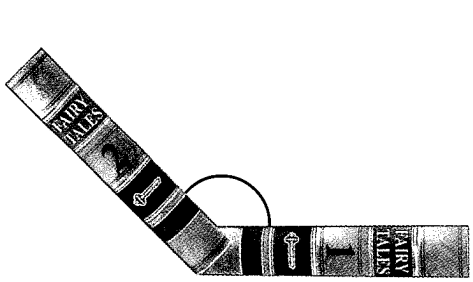
(a)

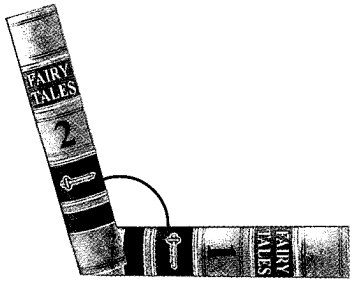


(b)



2. Write 'smaller than a right angle' and 'larger than a right angle' in the correct boxes.



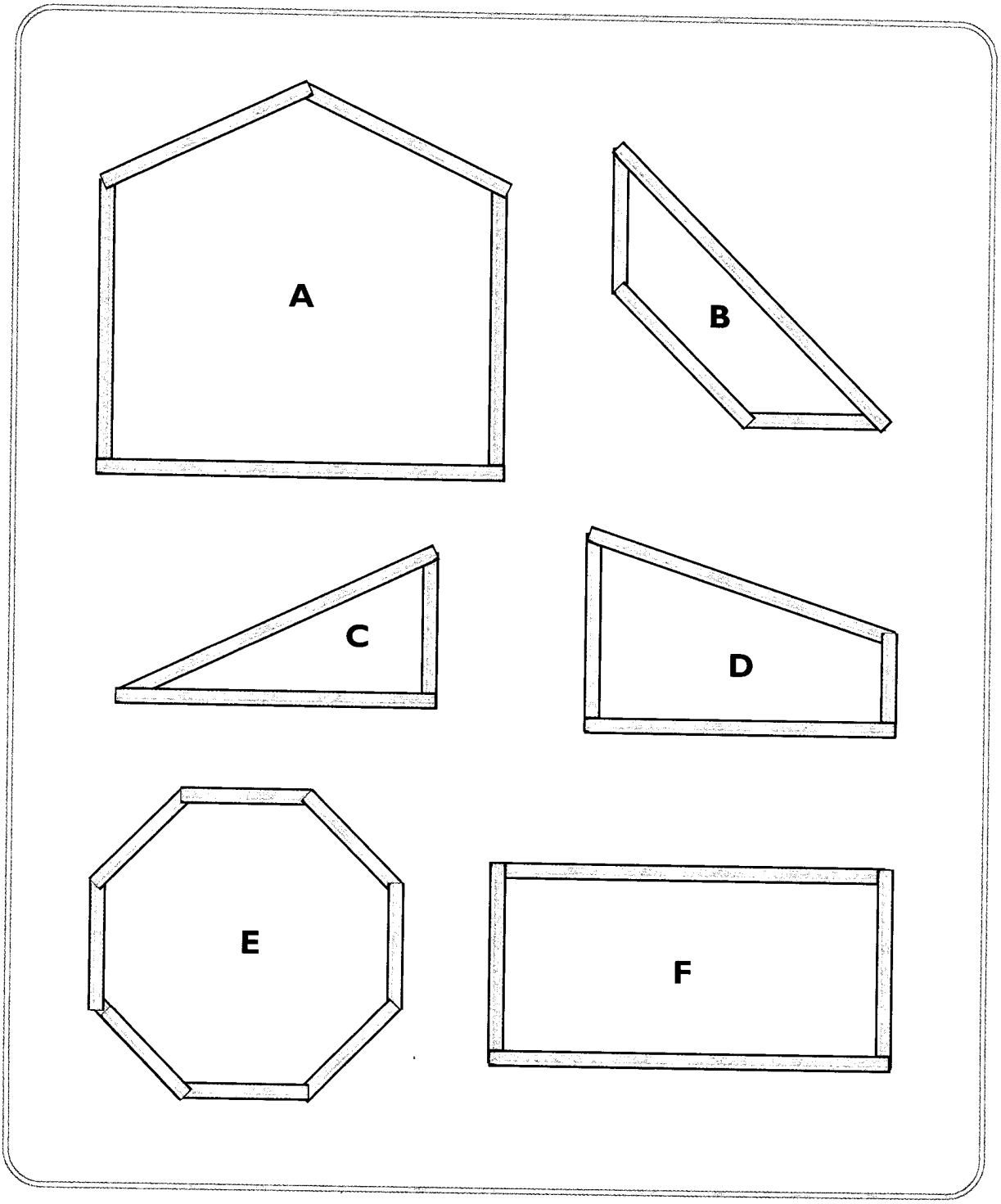


(a)

(b)

(c)

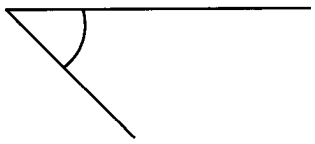
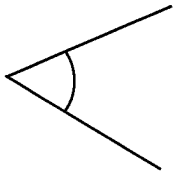
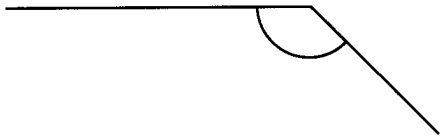
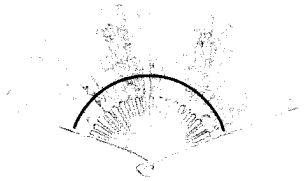
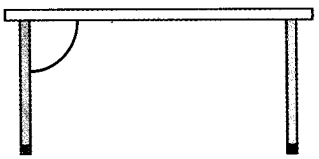
3. Mark out all the angles inside each figure.



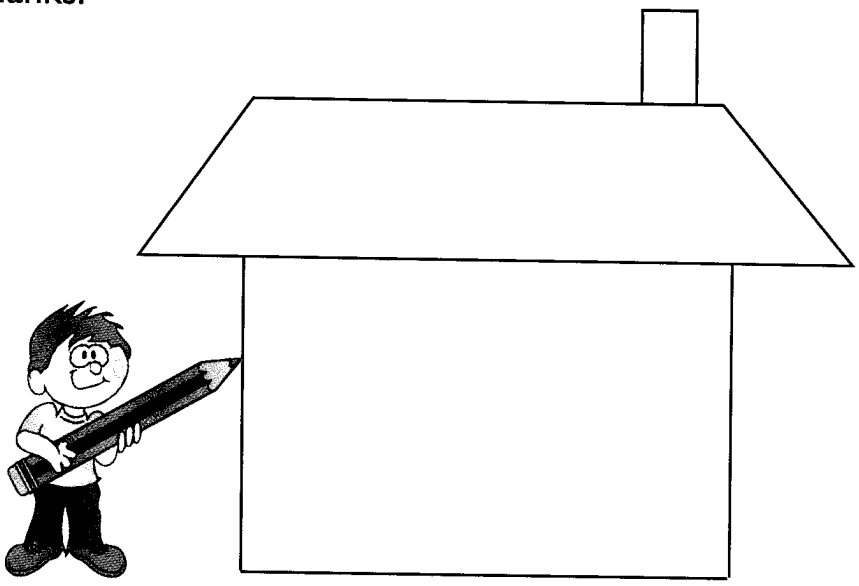
Exercise two

1. Write the following correctly to show the angle given:

- Smaller than a right angle
- Larger than a right angle
- Equal to a right angle

(a) 	
(b) 	
(c) 	
(d) 	
(e) 	
(f) 	

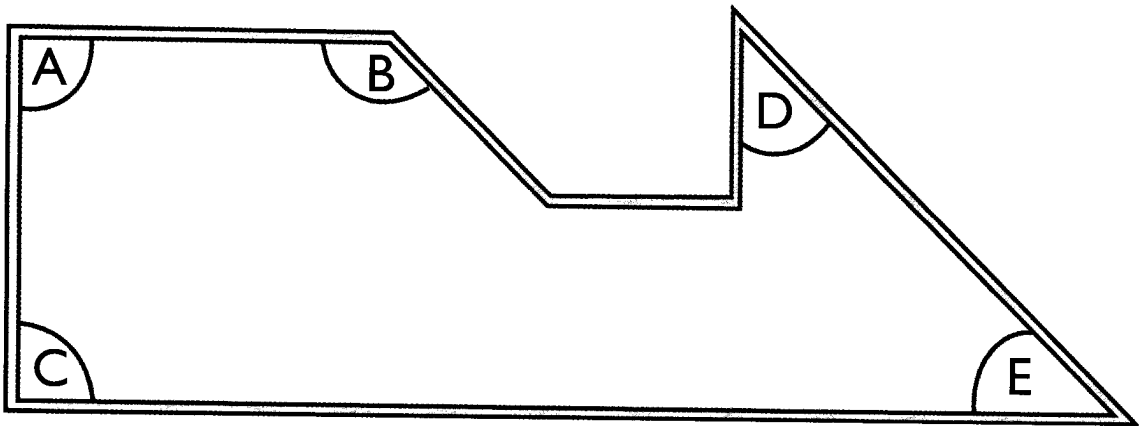
2. Andy has done a sketch of a house. Mark all the angles. Fill in the blanks.



How many right angles are there? _____
How many angles are larger than a right angle? _____
How many angles are smaller than a right angle? _____

3. Look at the following angles. Fill in the blanks (on the next page) with one of the following:

'smaller than a right angle'
'larger than a right angle'
'a right angle'



Angle A is _____.

Angle B is _____.

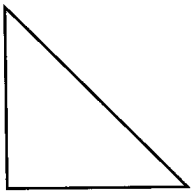
Angle C is _____.

Angle D is _____.

Angle E is _____.

4. Look at the following shapes. Fill in the blanks.

(a)

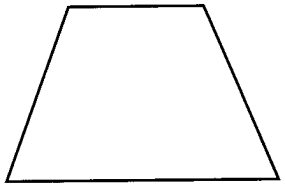


Number of sides: _____.

Number of angles inside the shape: _____.

Number of right angles inside the shape: _____.

(b)

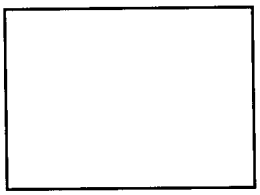


Number of sides: _____.

Number of angles inside the shape: _____.

Number of right angles inside the shape: _____.

(c)

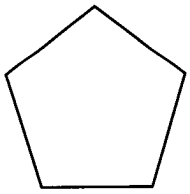


Number of sides: _____.

Number of angles inside the shape: _____.

Number of right angles inside the shape: _____.

(d)



Number of sides: _____.

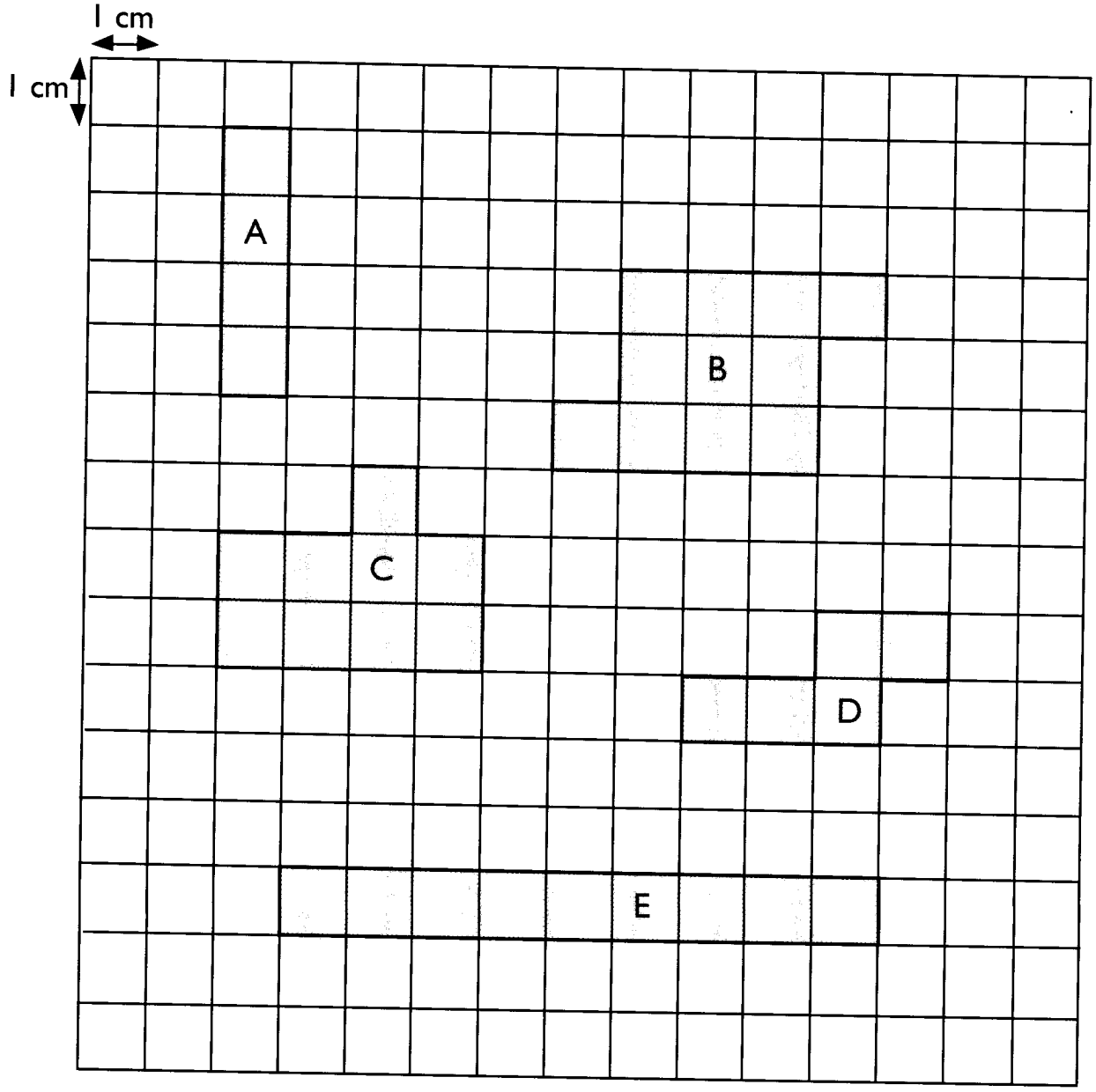
Number of angles inside the shape: _____.

Number of right angles inside the shape: _____.

Area And Perimeter

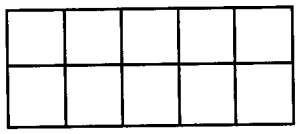
Exercise one

1. Tick the figure with the largest area and cross out the figure with the smallest area.



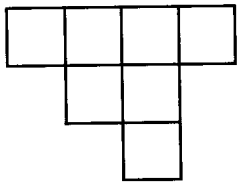
2. Match the figures to their areas. Each ☐ shows an area of 1 cm^2.

(a)



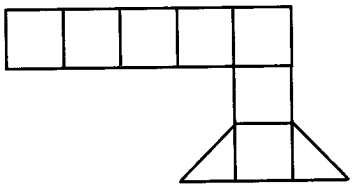
12 cm^2

(b)



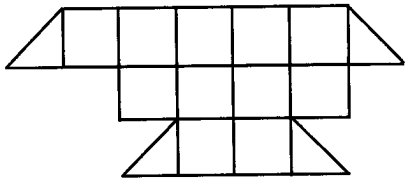
8 cm^2

(c)



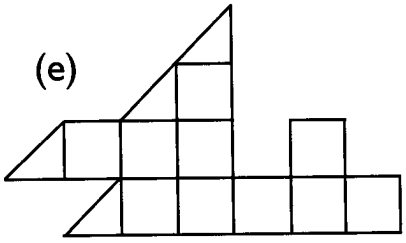
10 cm^2

(d)



13 cm^2

(e)



7 cm^2

3. Circle the more suitable unit used for measuring the area of the following:

(a) A postcard cm^2 / m^2

(b) The floor of the living room cm^2 / m^2

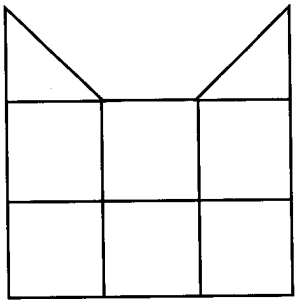
(c) The front cover of a story book cm^2 / m^2

(d) Your TV screen cm^2 / m^2

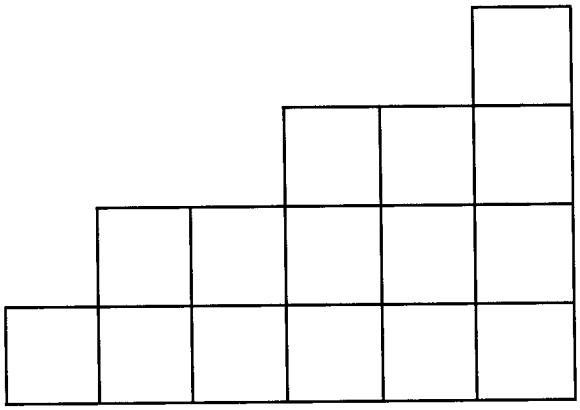
(e) A carpet for your bedroom cm^2 / m^2

(f) Your front door cm^2 / m^2

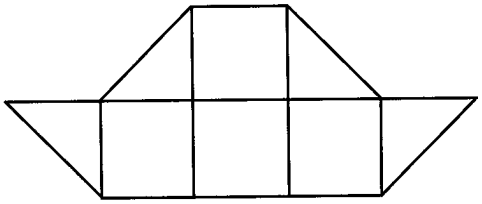
4. (a) What is the area of each of the following figures? Each ☐ shows an area of 1 yd^2.



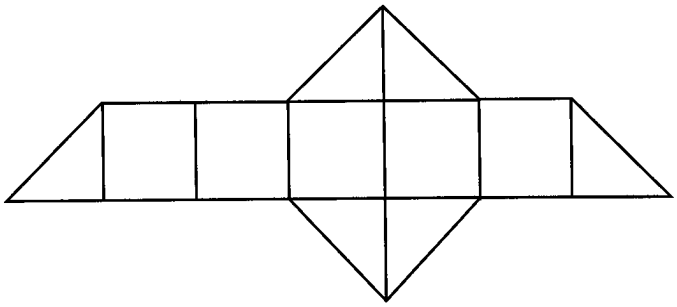
A : _____



B : _____



C : _____



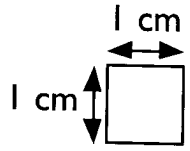
D : _____

(b) Which figure has the smallest area? _____

(c) List the figures in order from the figure with the smallest area to the figure with the largest area.

_____, _____, _____, _____

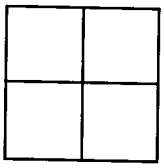
5. Look at these squares. Write the areas of these squares in square centimeters.



(a)

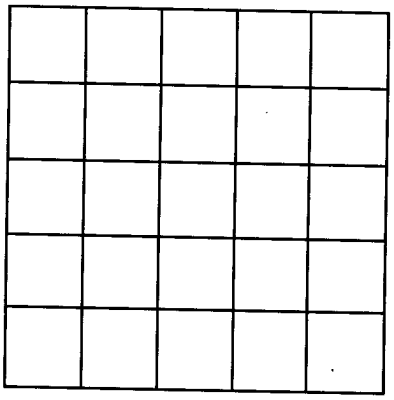
Area = _____

(b)



Area = _____

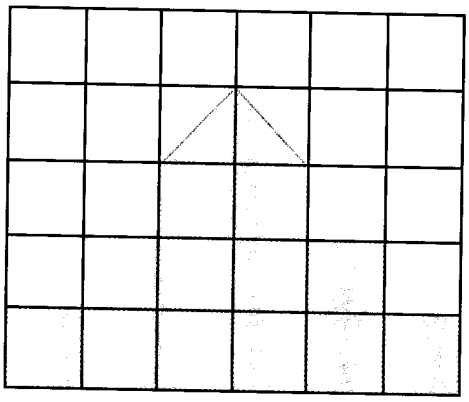
(c)



Area = _____

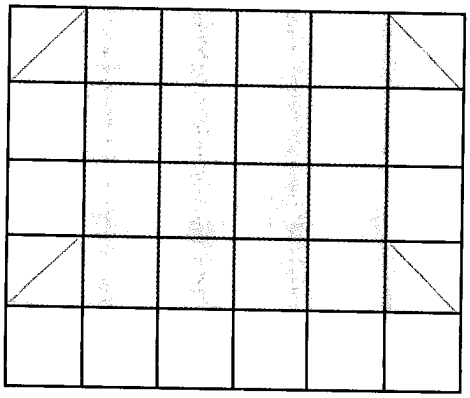
6. Find the area of the shaded shapes. Each  shows an area of 1 in^2.

(a)



Area = _____

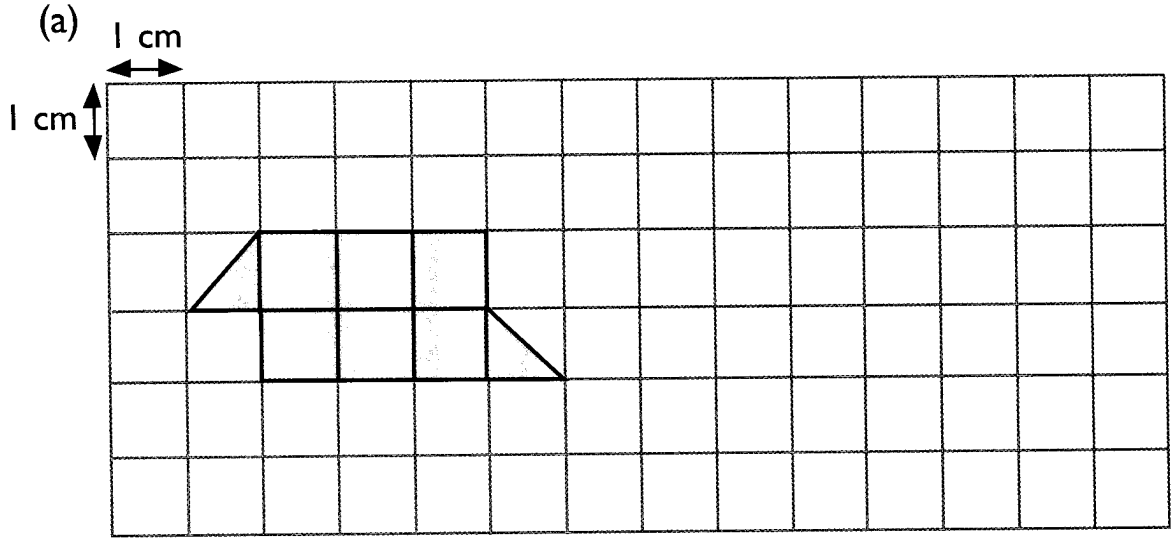
(b)



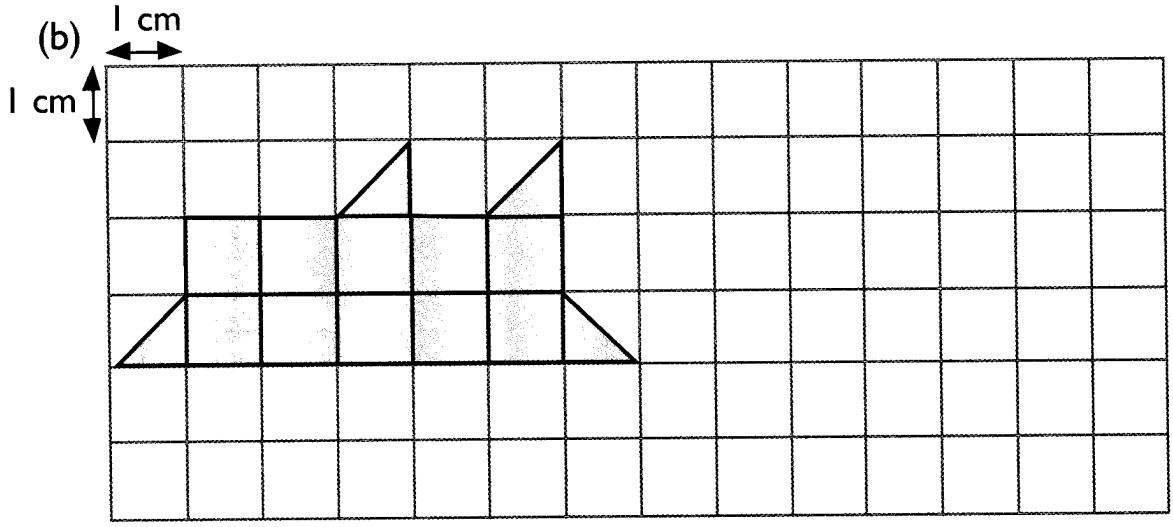
Area = _____

7. Draw another shape of the same area for each of the following figures.

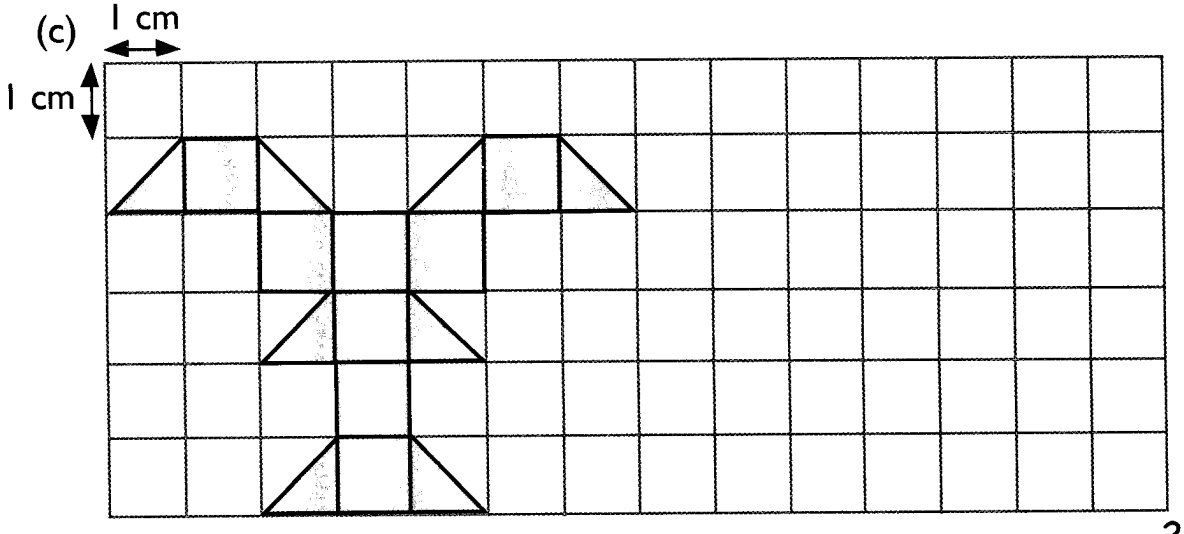
(a)



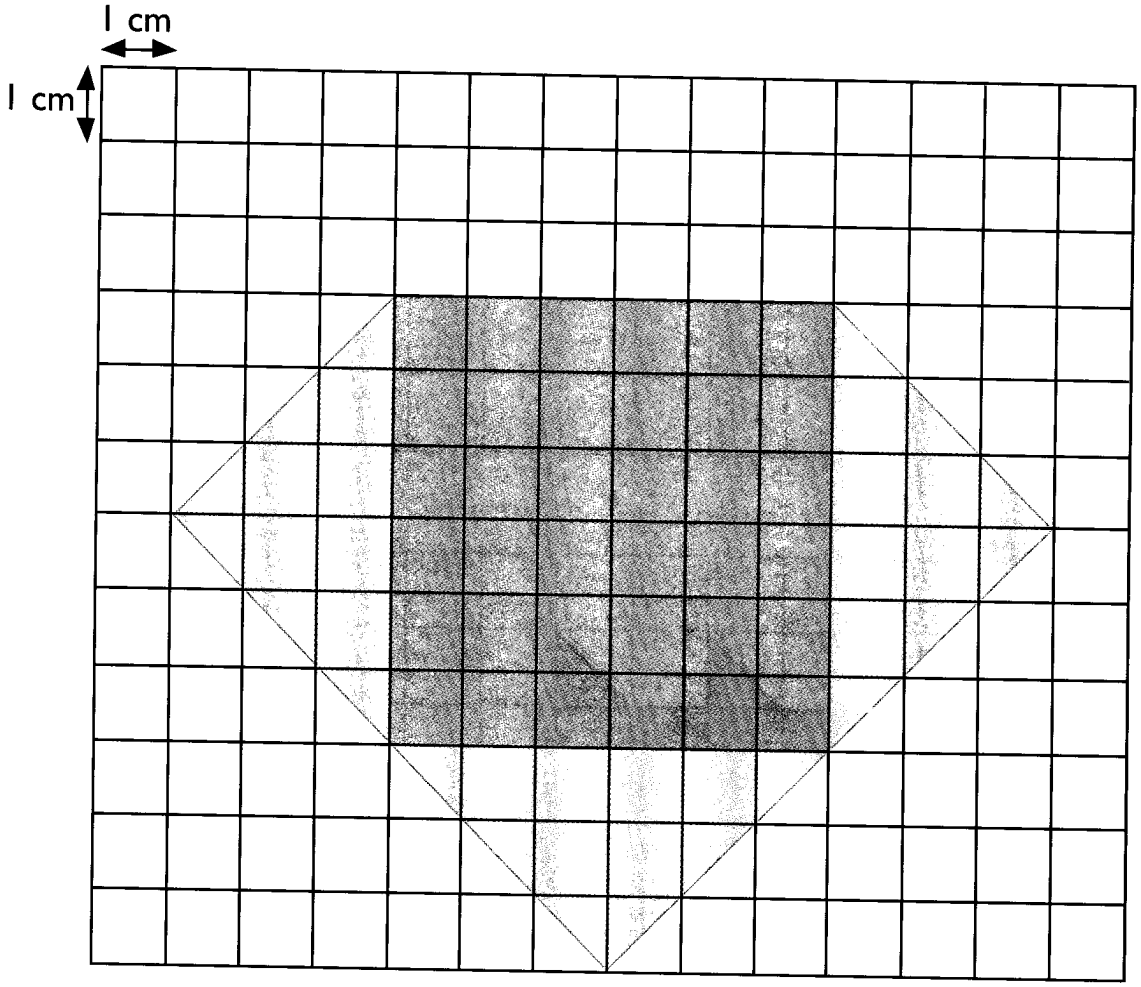
(b)



(c)



8. A figure made up of 3 triangles and a square is drawn on a square grid as shown. Look at the figure carefully and fill in the blanks.



(a) What is the area of the shaded square?

_____ cm^2

(b) What is the area of the 3 shaded triangles?

_____ cm^2

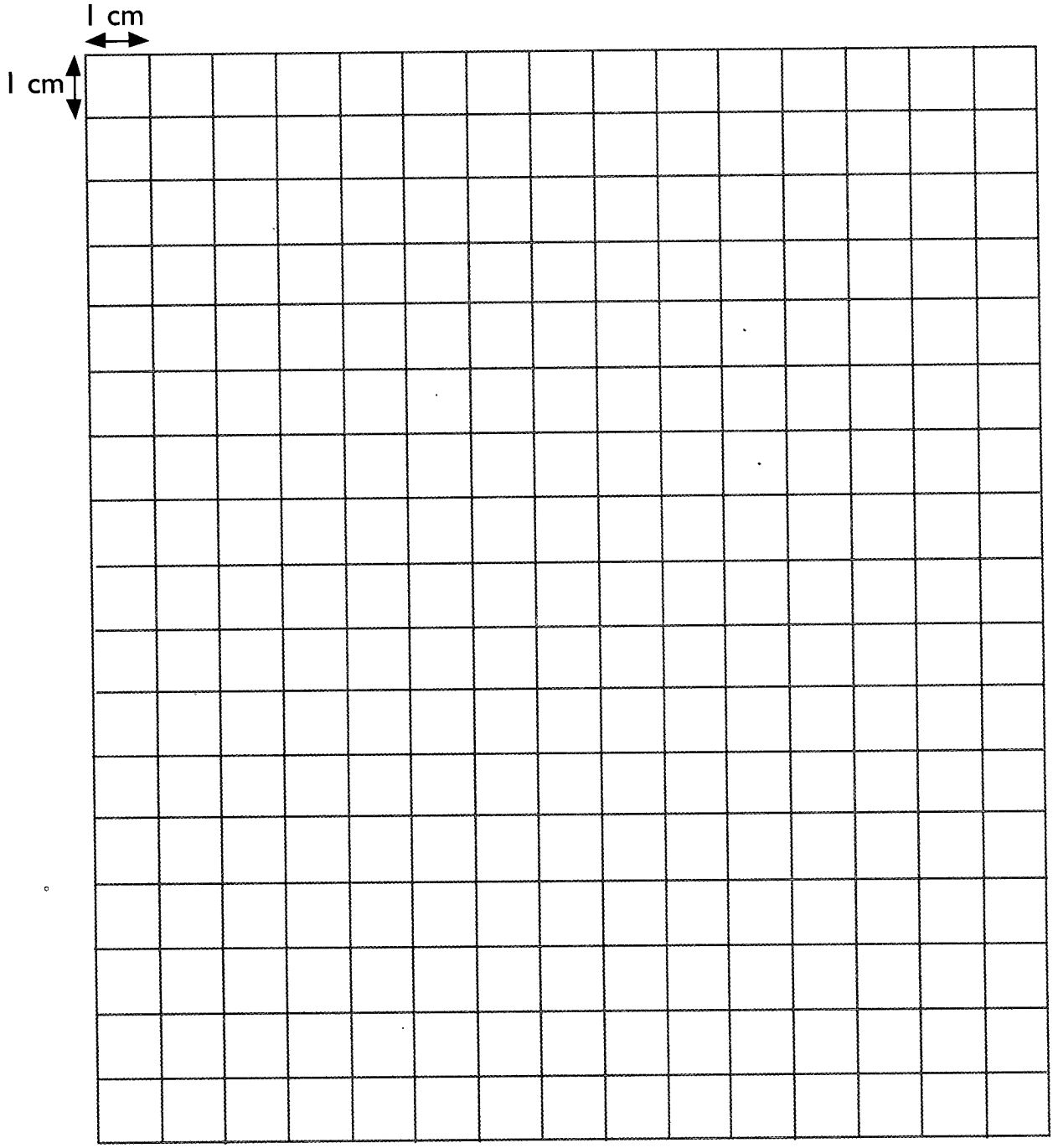
(c) What is the area of the whole shape?

_____ cm^2

9. Shade the squares to show figures with the following areas:

6 cm^2	12 cm^2	7cm^2

Write the areas on the respective figures.



Activity one

Let us start with a 1 cm by 1 cm square. Its area is 1 cm^2.

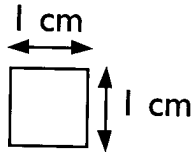


Figure 1

A larger square is formed by placing 1 cm^2 squares around the original square as shown in Figure 2.

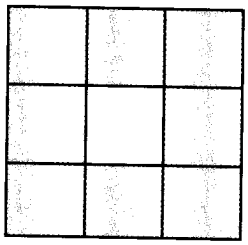


Figure 2

There are now 9 small squares altogether in this big square, covering a total area of 9 cm^2

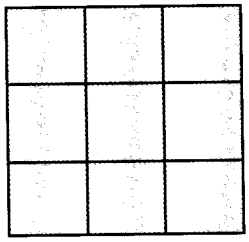
(a) Form a larger square by surrounding the square in Figure 2 with more 1 cm^2 squares.
Call the new square Figure 3.

(b) Repeat the process 2 more times to create Figure 4 and Figure 5. Discuss the different ways of finding the areas of Figure 4 and Figure 5.

Exercise two

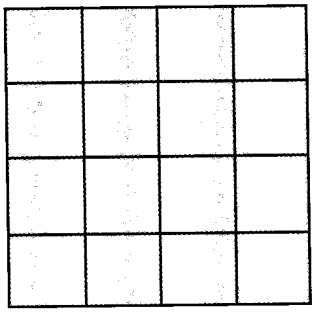
1. Look at the following shapes and fill in the blanks. Each ☐ shows an area of 1 cm^2.

(a)



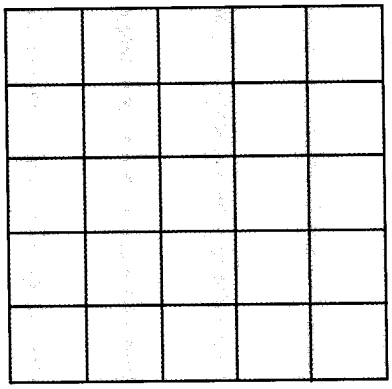
Area = _____

(b)



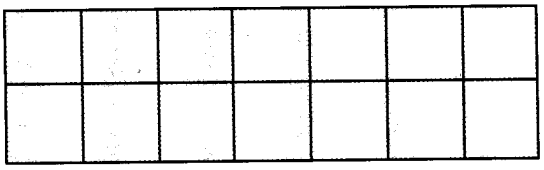
Area = _____

(c)



Area = _____

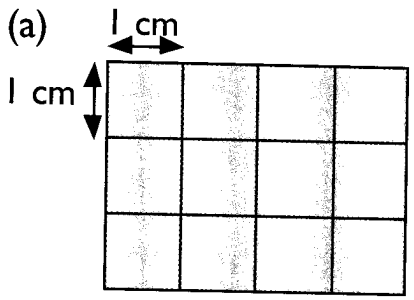
(d)



Area = _____

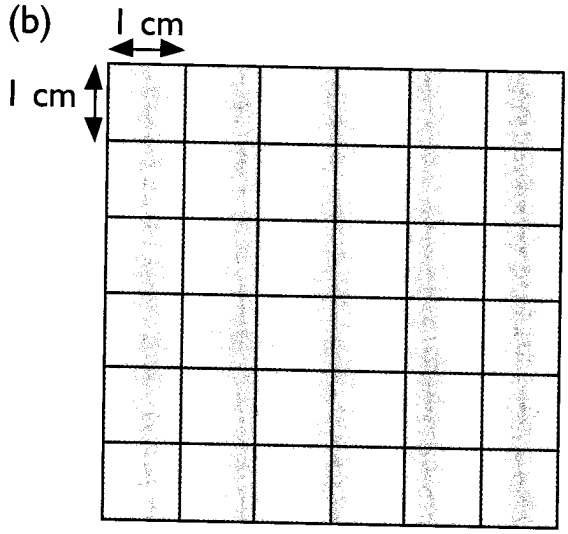
2. Find the area of the following figures.

(a)



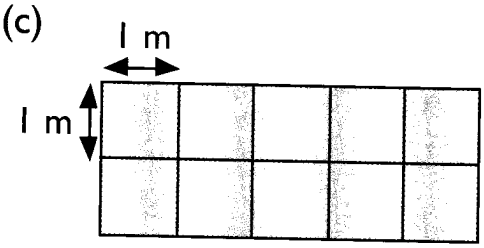
Area = _____ × _____
= _____ cm^2

(b)



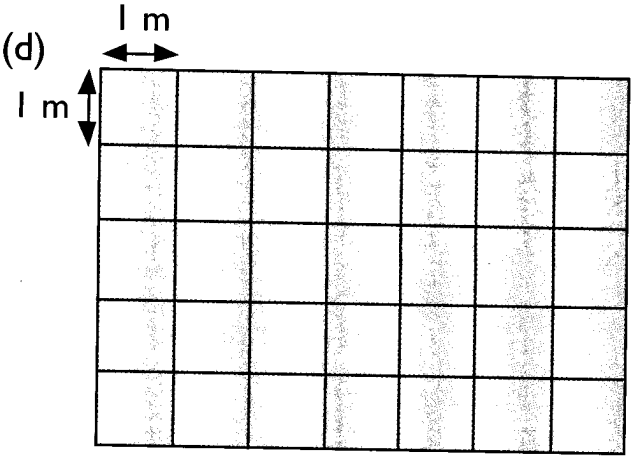
Area = _____ × _____
= _____ cm^2

(c)



Area = _____ × _____
= _____ m^2

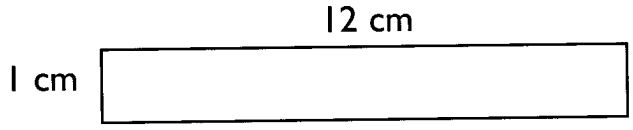
(d)



Area = _____ × _____
= _____ m^2

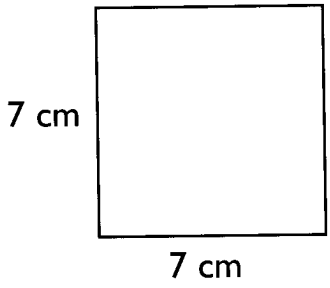
3. Find the areas of the following figures.

(a)



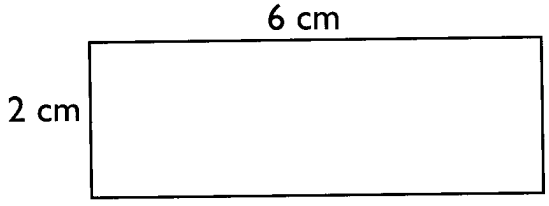
Area = _____ × _____ = _____

(b)



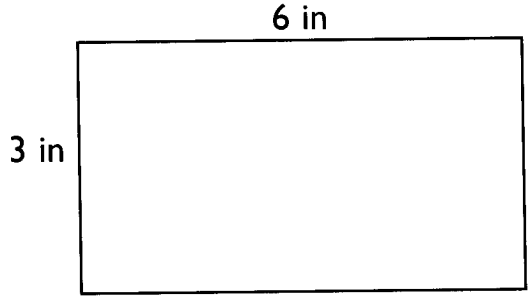
Area = _____ × _____ = _____

(c)



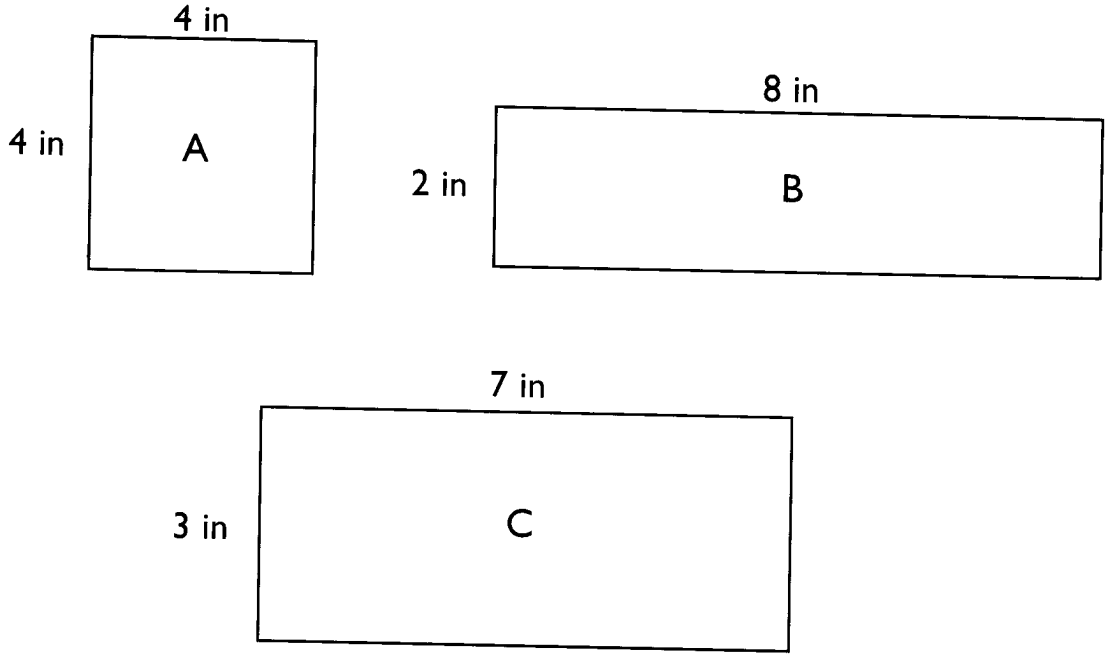
Area = _____ × _____ = _____

(d)



Area = _____ × _____ = _____

4. Answer the following questions.



(a) What is the area of each figure?

Area of A = _____ × _____ = _____ in^2

Area of B = _____ × _____ = _____ in^2

Area of C = _____ × _____ = _____ in^2

(b) Which figure has the largest area? _____

(c) Which two figures have the same area?

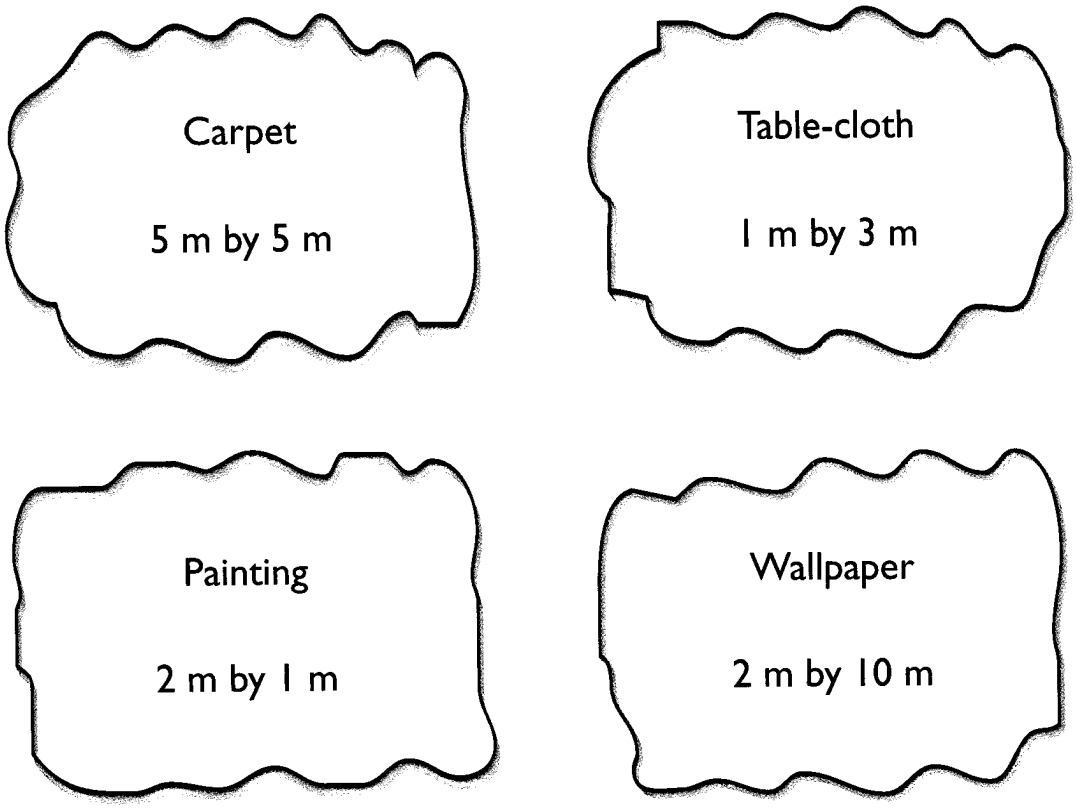
_____ and _____

(d) What is the total area of the three figures?

Total area = _____ + _____ + _____

= _____ in^2

5. Joyce bought a few rectangular-shaped items. The measurements of the items she bought are as follows:



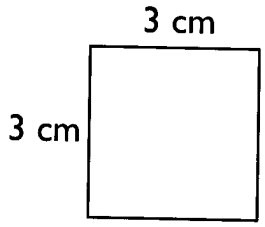
(a) What had the smallest area? _____

(b) What was the area of the table-cloth? _____

(c) How much larger was the area of the wall paper than the area of the painting? _____

6. Find the area of the following figures.

(a)



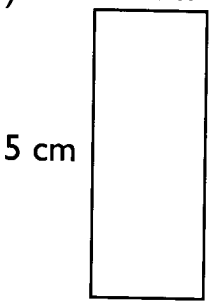
Area = _____ × _____

= _____

Area if
length and breadth
are doubled = _____ × _____

= _____

(b)



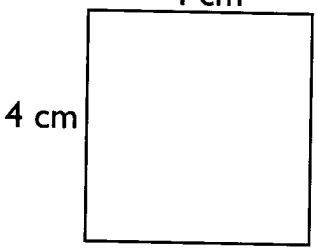
Area = _____ × _____

= _____

Area if
length and breadth
are doubled = _____ × _____

= _____

(c)



Area = _____ × _____

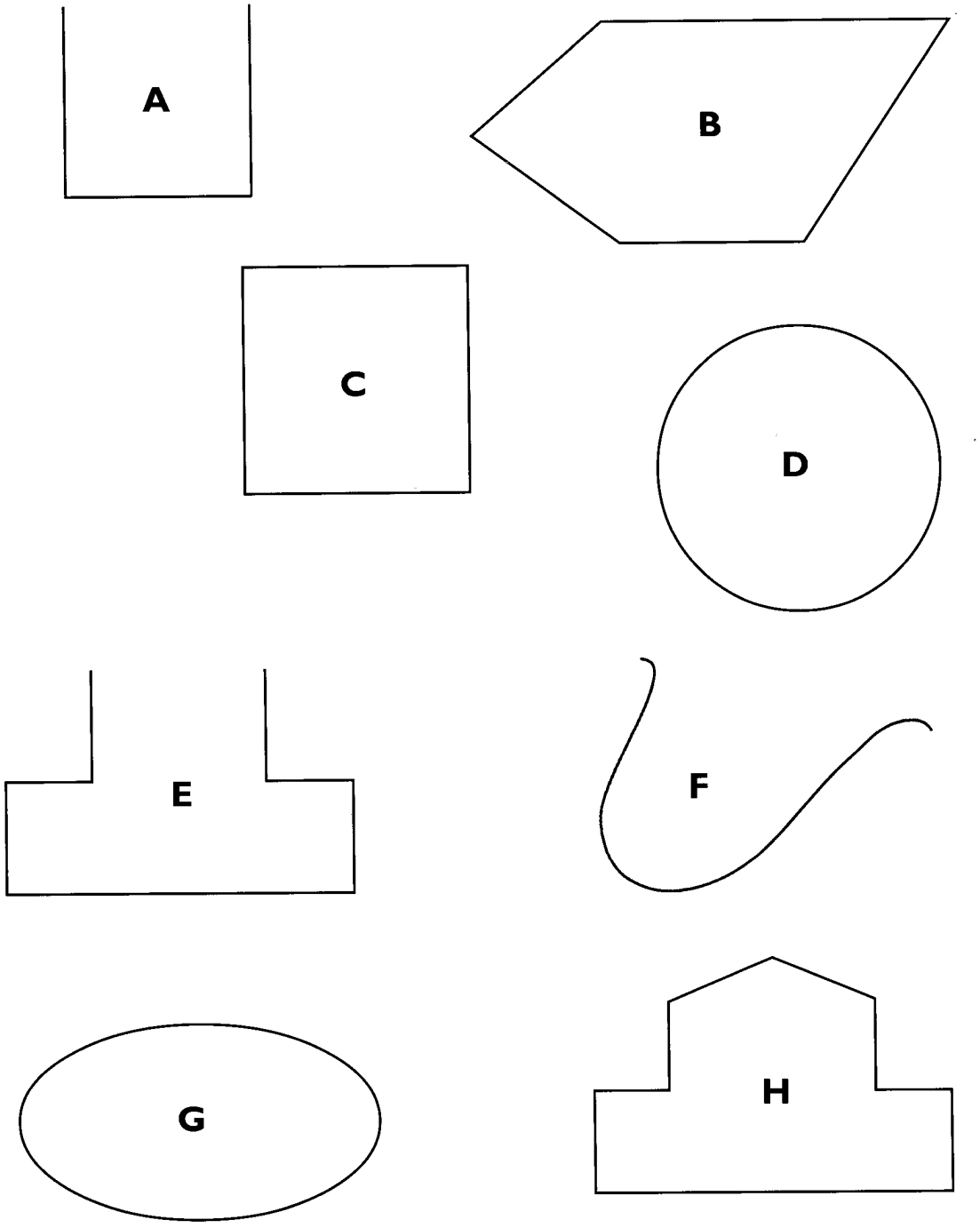
= _____

Area if
length and breadth
are doubled = _____ × _____

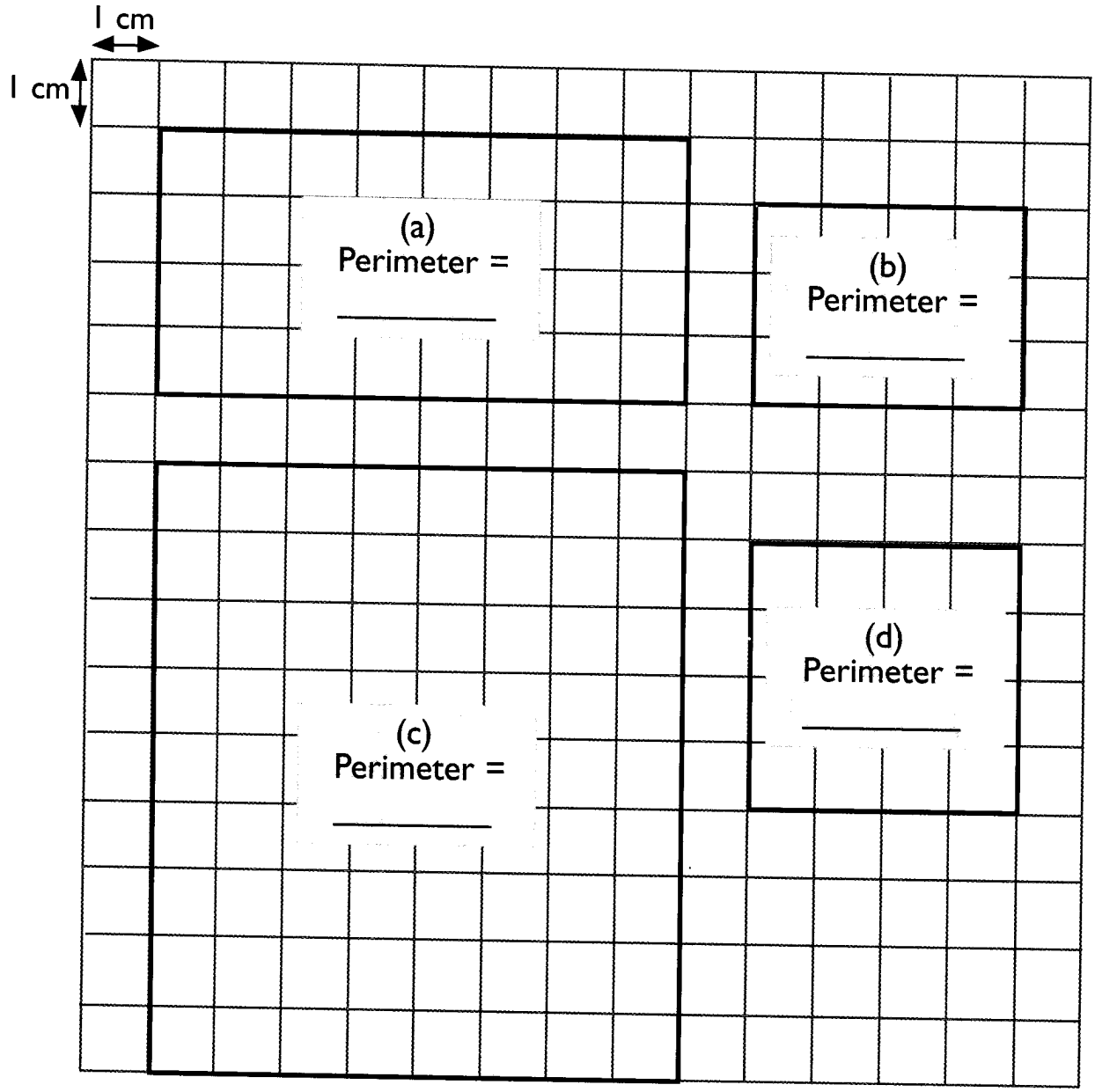
= _____

Exercise three

1. Cross out the figures that do not have a perimeter.

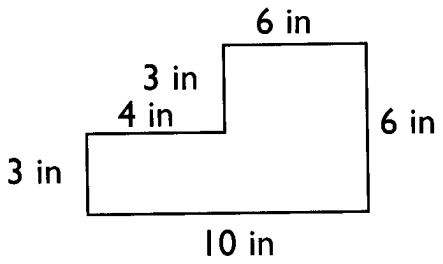


2. Find the perimeter of the following figures.



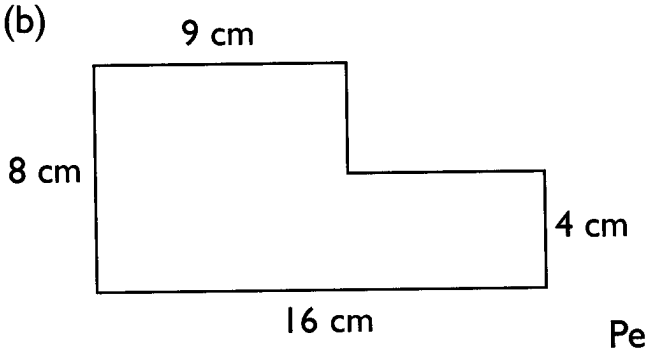
3. Find the perimeter of the figures below.

(a)



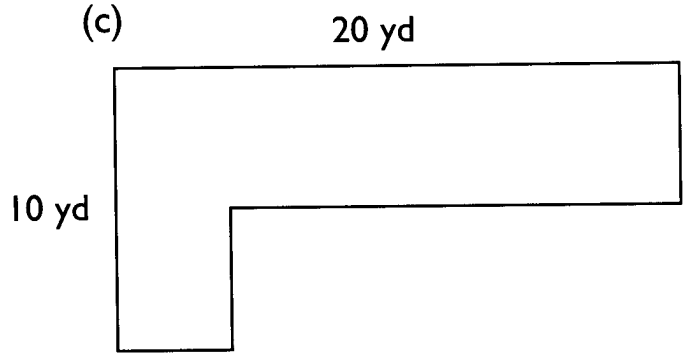
Perimeter = _____

(b)



Perimeter = _____

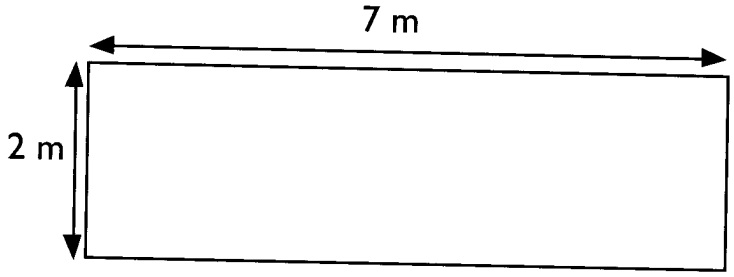
(c)



Perimeter = _____

4. Find the area and perimeter of each of the shapes below.

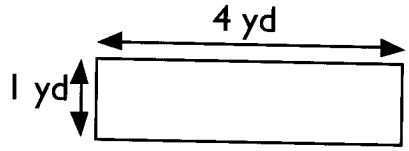
(a)



Area = _____

Perimeter = _____

(b)

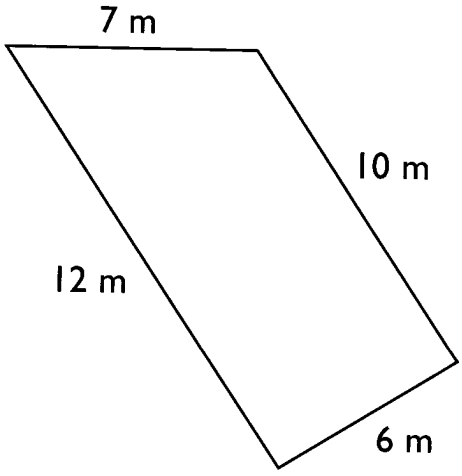


Area = _____

Perimeter = _____

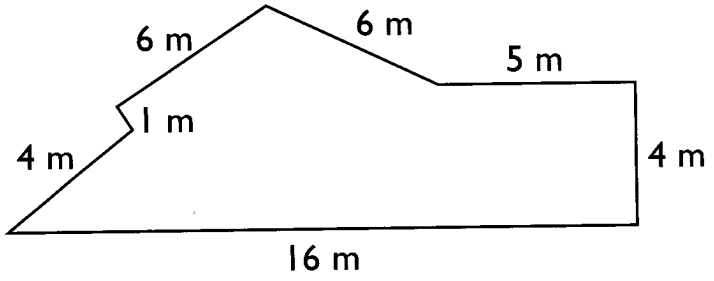
5. Find the perimeter of each figure.

(a)



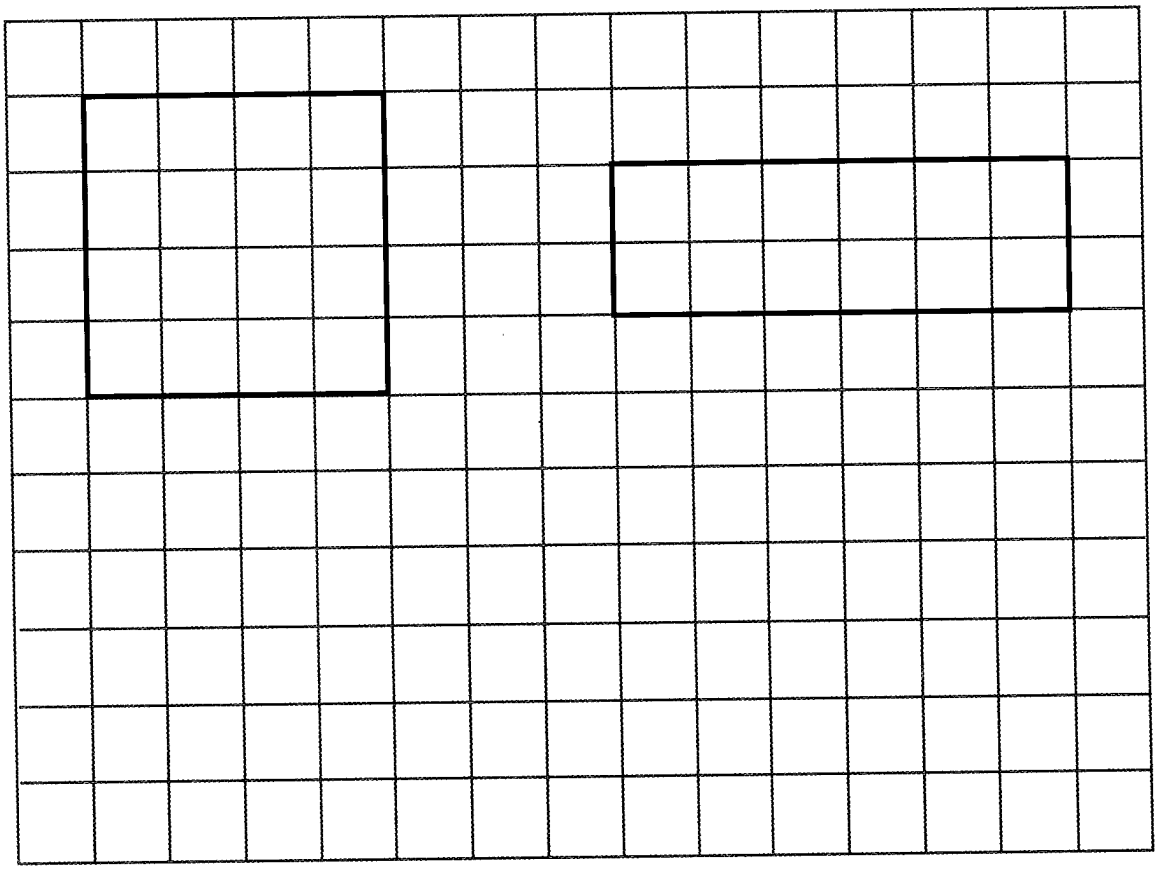
Perimeter = _____

(b)

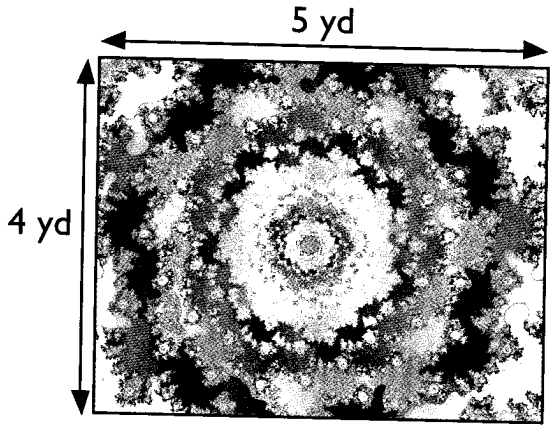


Perimeter = _____

6. The 2 shapes in the grid below have the same perimeter. In the space below, draw another rectangle that has the same perimeter.



7. Mary bought a carpet for her living room.



(a) What is the area of the carpet?

_____ × _____ = _____

The area is _____.

(b) What is the perimeter of the carpet?

_____ + _____ + _____ + _____

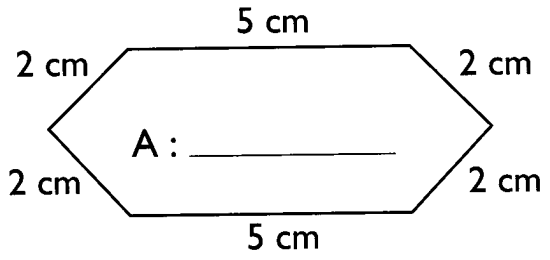
The perimeter is _____.

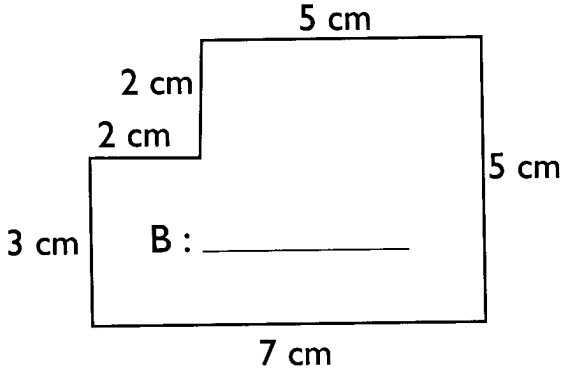
(c) If the length and breadth of the carpet were doubled, what would its perimeter be?

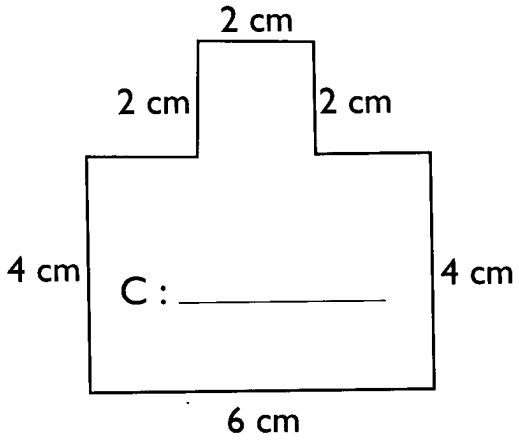
_____ × _____ = _____

Its perimeter would be _____ times.

8. Find the perimeters of the given figures. Fill in the blanks.



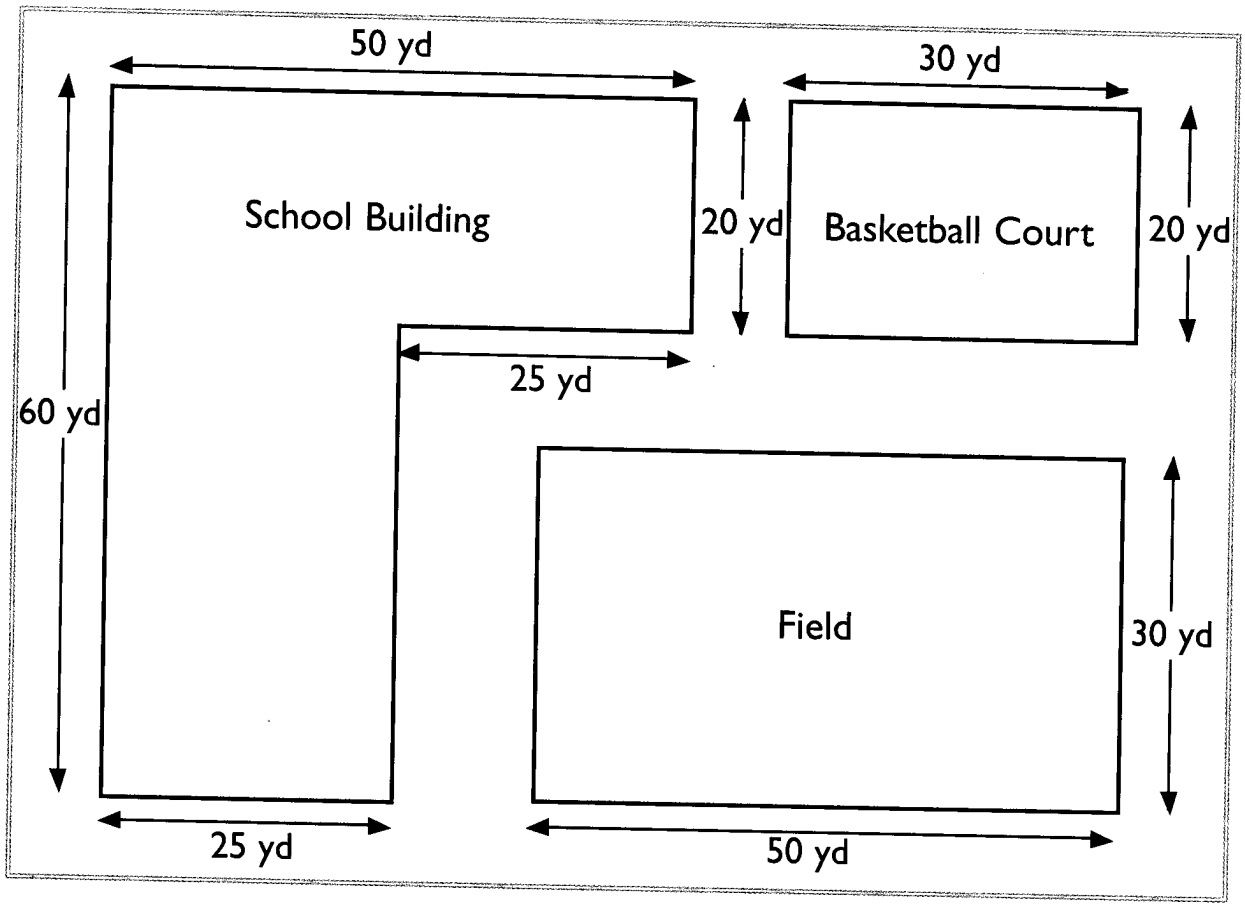




(a) Figure _____ has the largest perimeter.

(b) The total perimeter of figures A and C is _____ cm.

9. A plan of a school is given below.



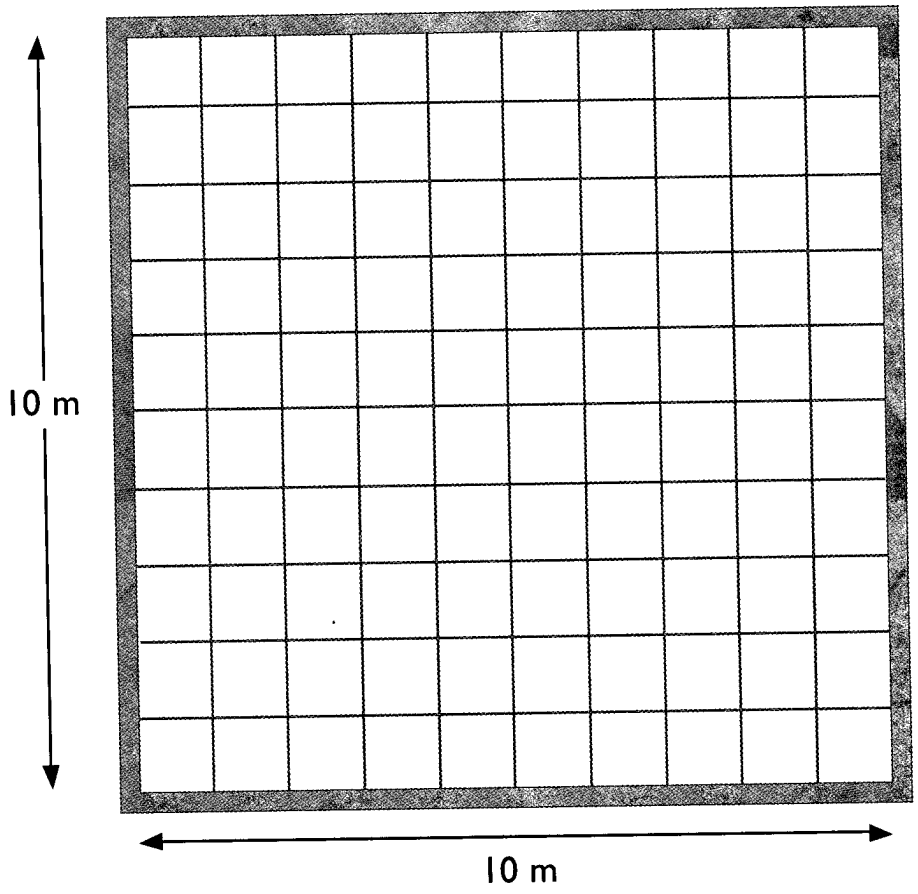
(a) The school building has a perimeter of _____ yd.

(b) The basketball court has a perimeter of _____ yd.

(c) Every Saturday, the students run around the school field 5 times. Calculate the total distance they run every Saturday.

Activity two

Let's learn to be an architect!



The above represents an empty floor plan. Now, draw the following rooms on the floor plan:

(a) 3 bedrooms;

(b) 1 kitchen;

(c) 1 living room;

(d) 2 toilets.

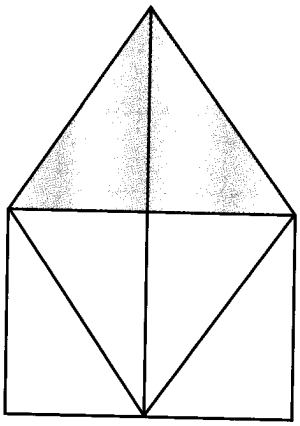
Make sure you name your rooms.

Let's Revise

Exercise one

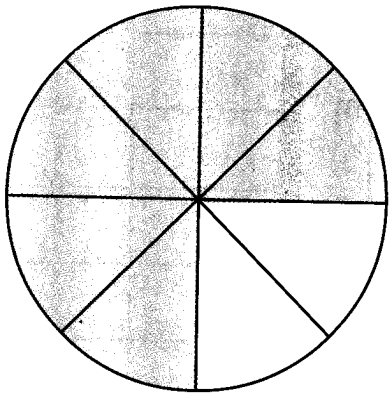
1. What fraction of each figure is shaded? Write each fraction in its simplest form.

(a)

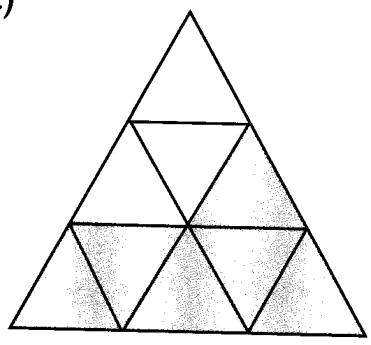


$\frac{2}{6} =$

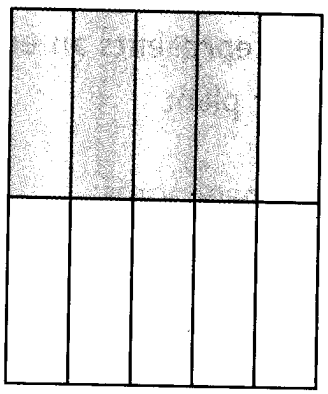
(b)



(c)



(d)



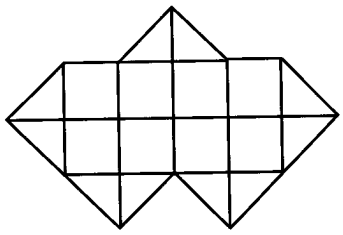
2. Arrange in order. Start with the smallest fraction.

(a) $\frac{1}{2}, \frac{1}{4}, \frac{12}{12}$

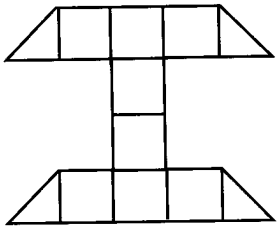
(b) $\frac{3}{4}, \frac{1}{2}, \frac{1}{8}$

3. Find the areas of these figures. Each ☐ shows an area of 1 m^2.

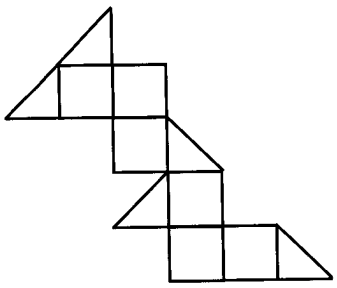
(a)



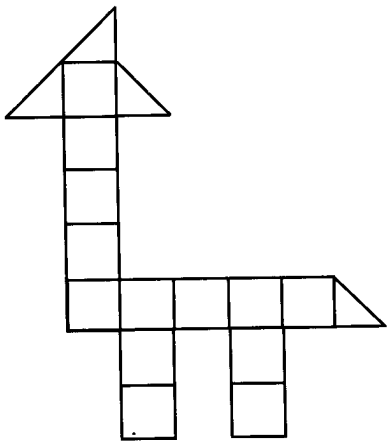
(b)



(c)

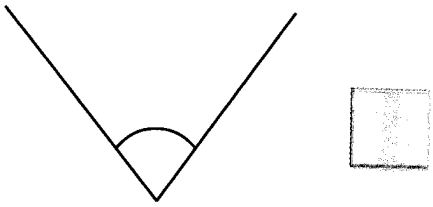


(d)

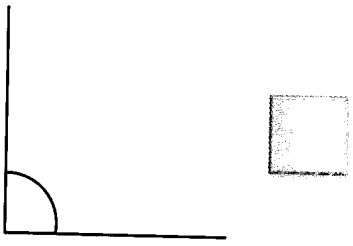


4. Tick the angle that is less than a right angle.

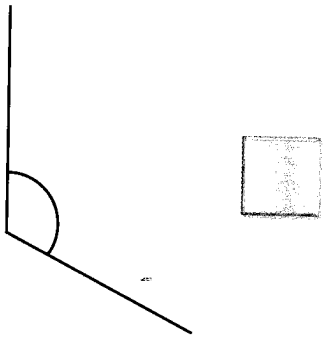
(a)



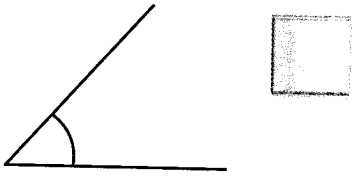
(b)



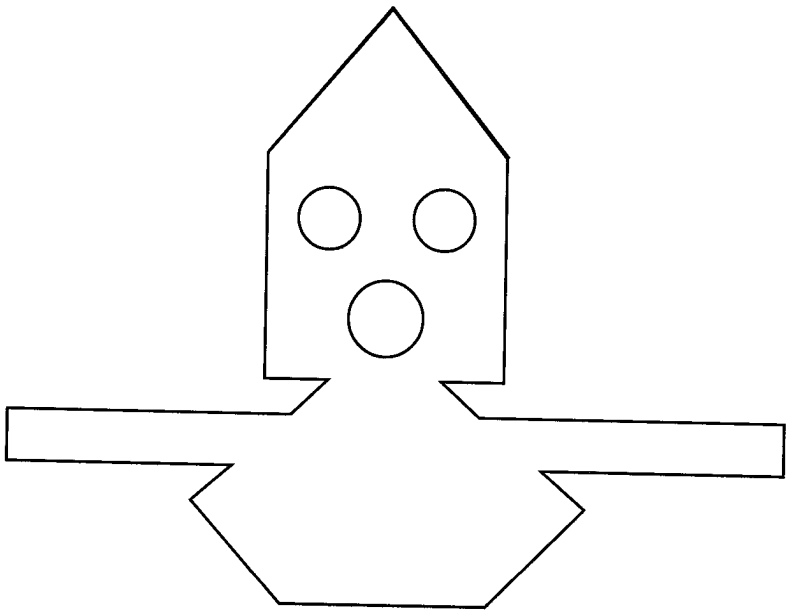
(c)



(d)



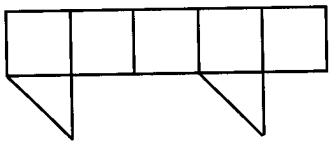
5. Mark all the right angles. How many right angles are there?



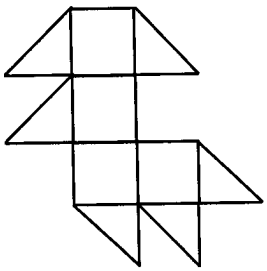
There are _____ right angles.

6. Match the figures to their areas. Each ☐ shows an area of 1 yd^2.

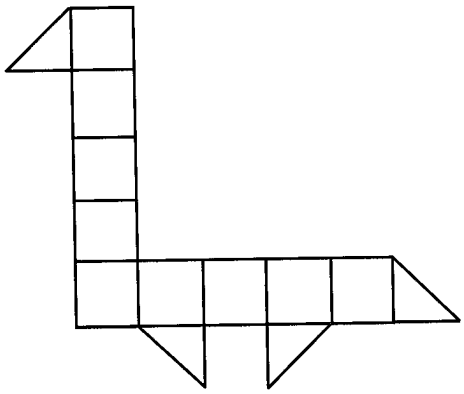
(a)



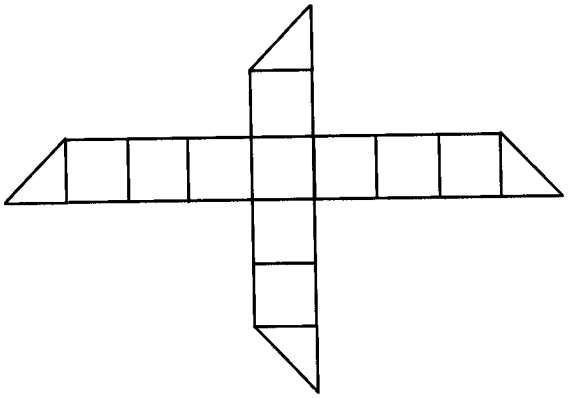
(b)



(c)



(d)

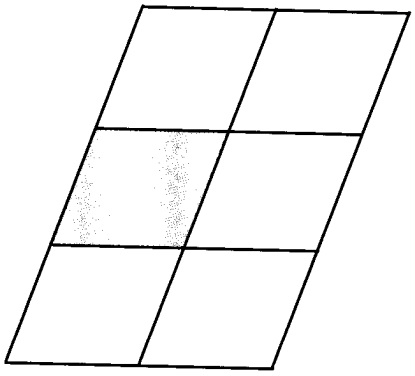


- 11 yd^2
- 7 yd^2
- 12 yd^2
- 6 yd^2

Exercise two

1. What fraction of each figure is shaded? What is the denominator and numerator?

(a)

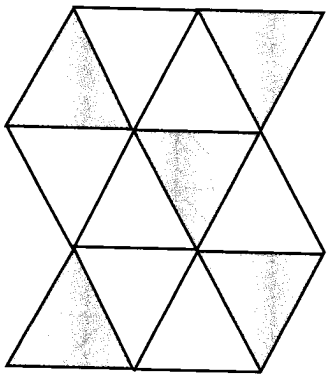


Fraction: _____

Numerator: _____

Denominator: _____

(b)



Fraction: _____

Numerator: _____

Denominator: _____

2. Fill in the missing numbers.

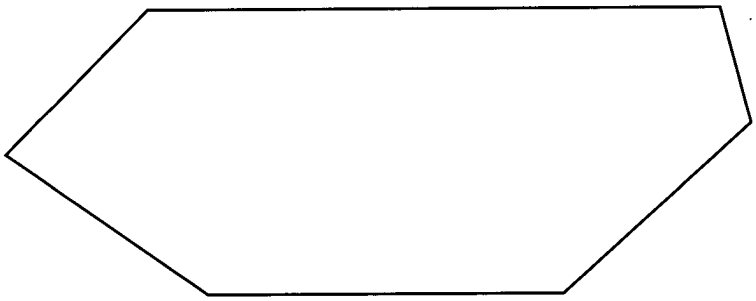
(a) $\frac{2}{6} = \frac{4}{\square}$

(b) $\frac{4}{\square} = \frac{8}{10}$

(c) $\frac{6}{9} = \frac{2}{\square}$

(d) $\frac{\square}{3} = \frac{8}{12}$

3. Look at the figure. Fill in the blanks.



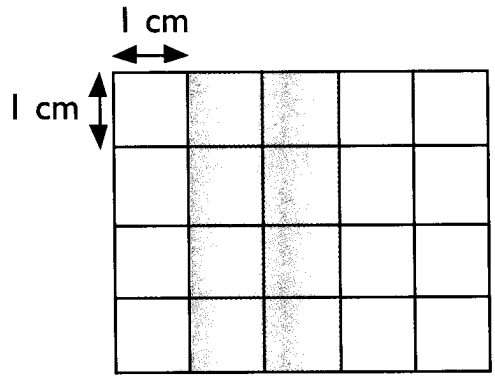
(a) How many right angles are there inside the figure? _____

(b) How many angles inside the figure are less than a right angle?

_____

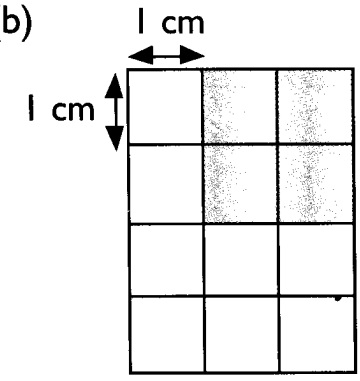
4. Find the area of the shaded part.

(a)



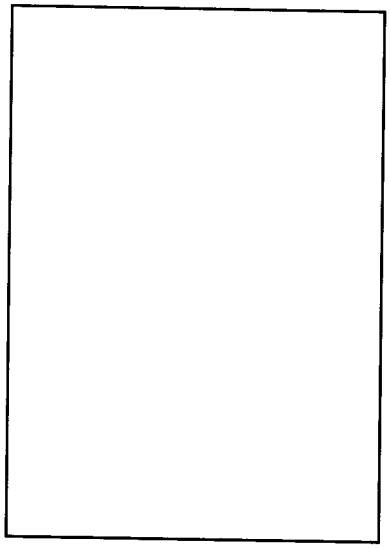
_____

(b)



_____

5. Measure the length and breadth of each figure in centimeters. Find the area and perimeter of the figure.

(a) 

Length = _____

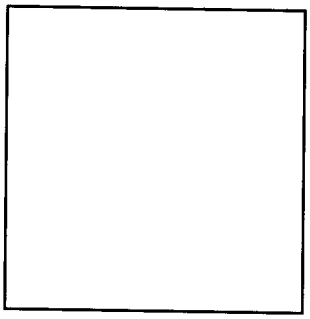
Breadth = _____

Area = _____ × _____

= _____

Perimeter = _____ + _____ + _____ + _____

= _____

(b) 

Length = _____

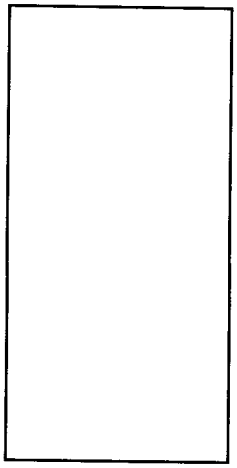
Breadth = _____

Area = _____ × _____

= _____

Perimeter = _____ + _____ + _____ + _____

= _____

(c) 

Length = _____

Breadth = _____

Area = _____ × _____

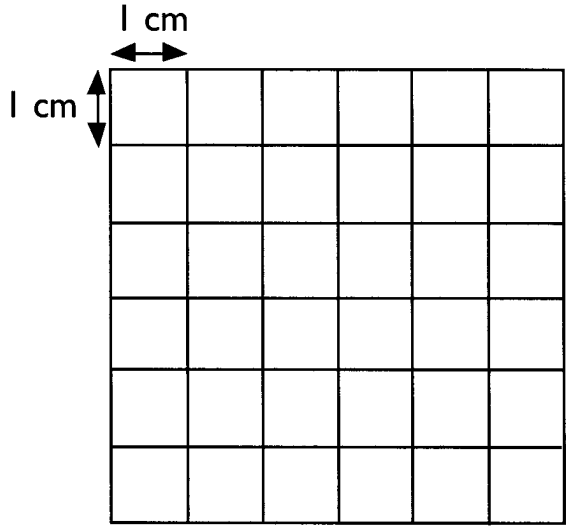
= _____

Perimeter = _____ + _____ + _____ + _____

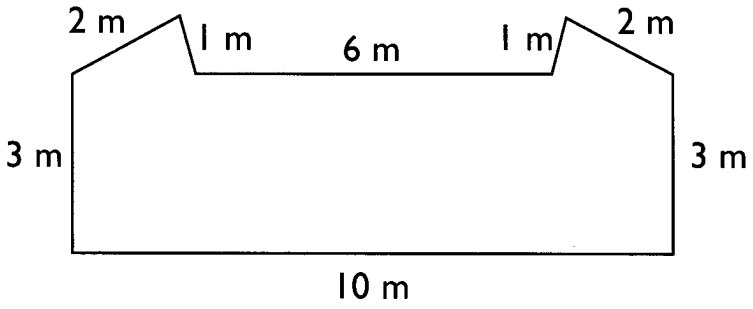
= _____

Exercise three

1. Shade the following figure to show an area of 15 cm^2.

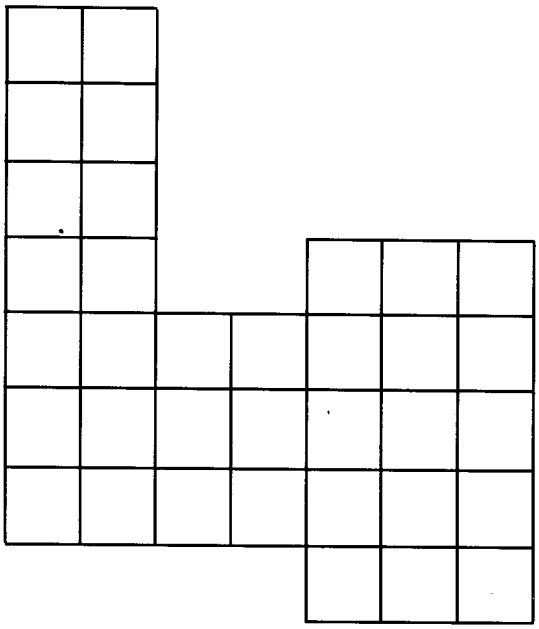


2. Find the perimeter of the figure below.



3. Find the area and peimeter of the following figures. Each ☐ shows an area of 1 cm^2.

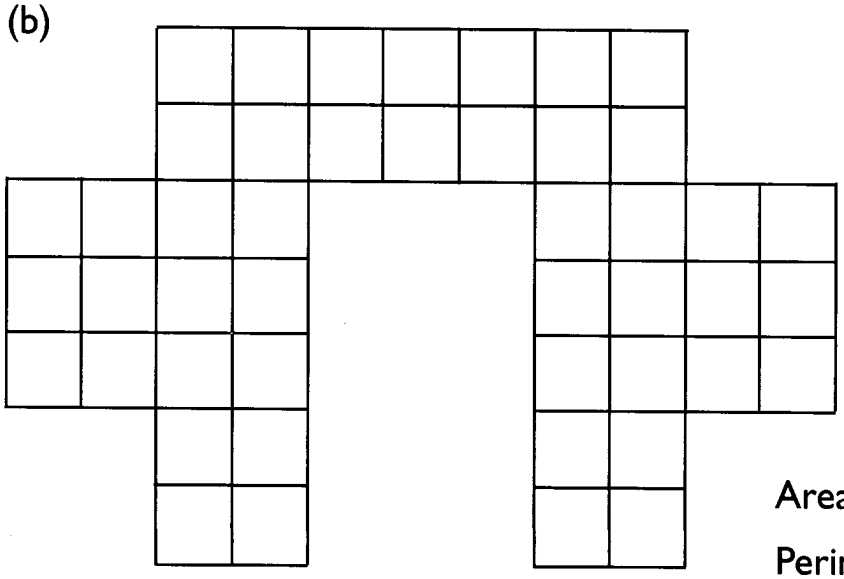
(a)



Area : _____

Perimeter : _____

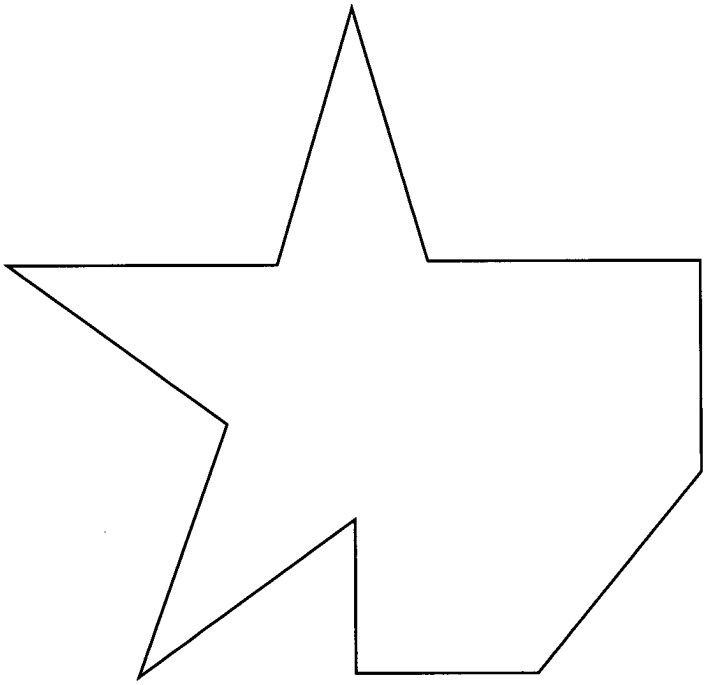
(b)



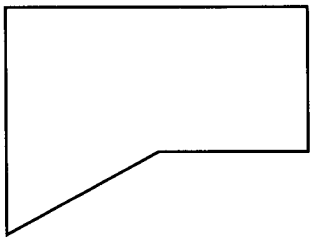
Area : _____

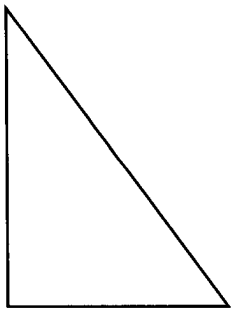
Perimeter : _____

4. Mark out the angles that are less than a right angle inside the figure below.



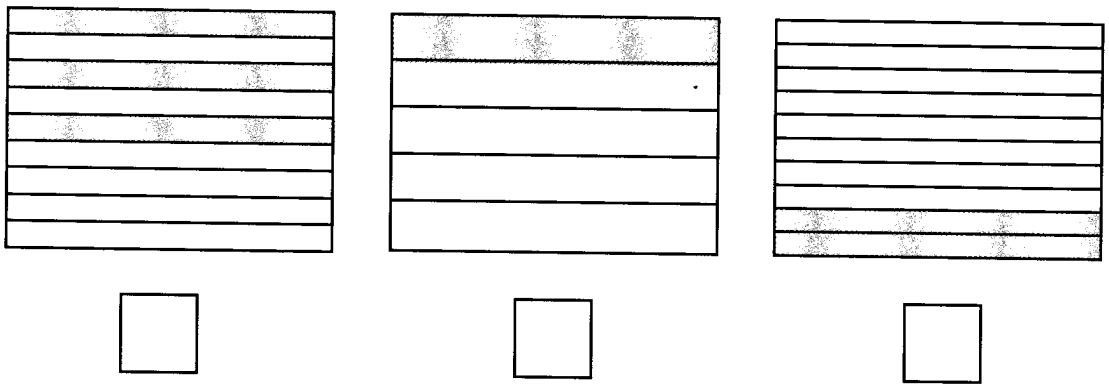
5. Mark out the right angles inside the following figures.



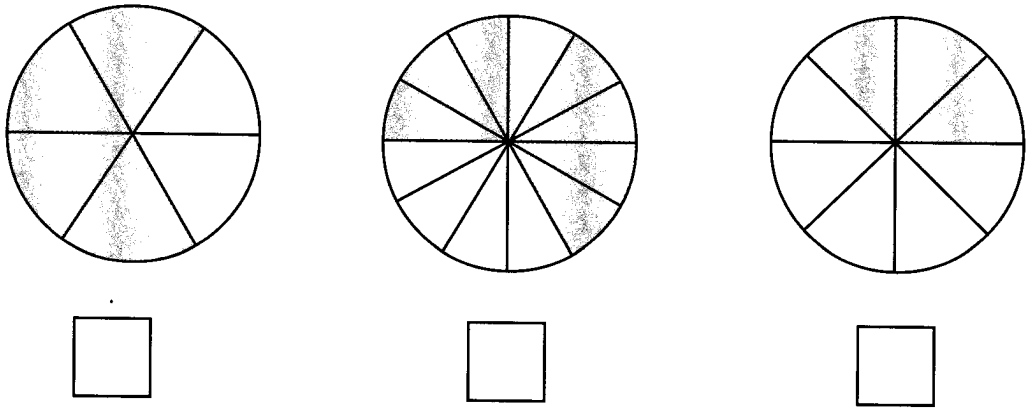


6. Tick the equivalent fractions represented by the shaded parts in each of the following.

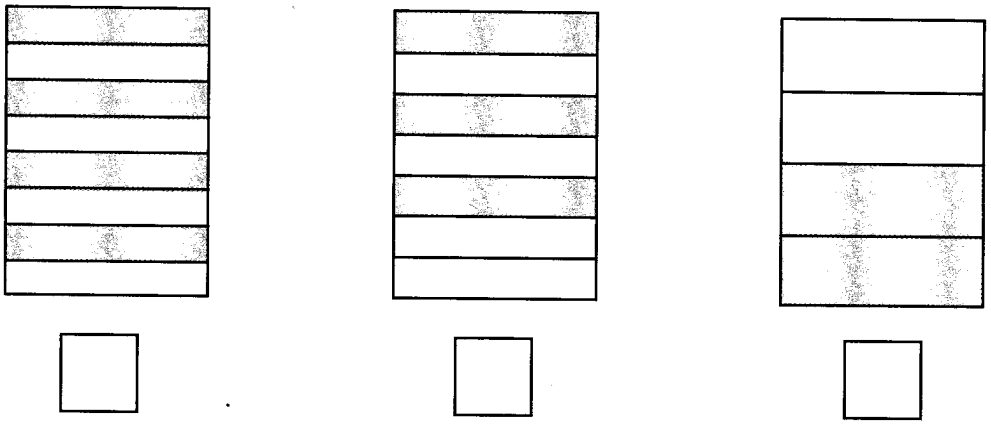
(a)



(b)

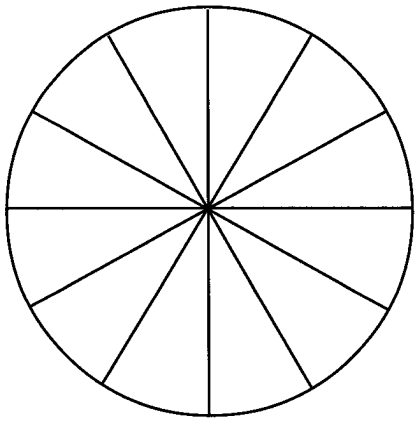


(c)

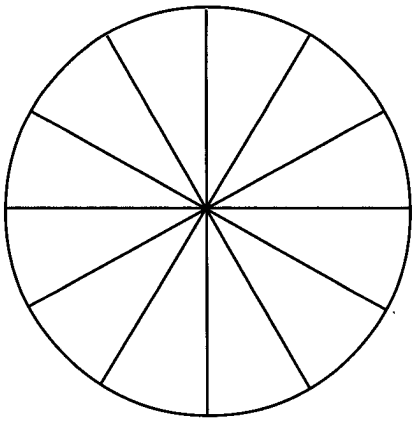


7. Shade the figures to show the given fractions. Circle the larger fraction.

(a)

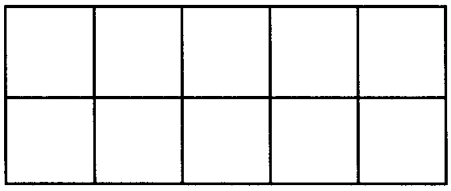


$\frac{1}{3}$

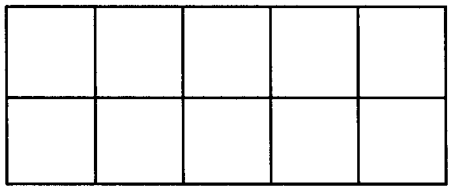


$\frac{1}{4}$

(b)

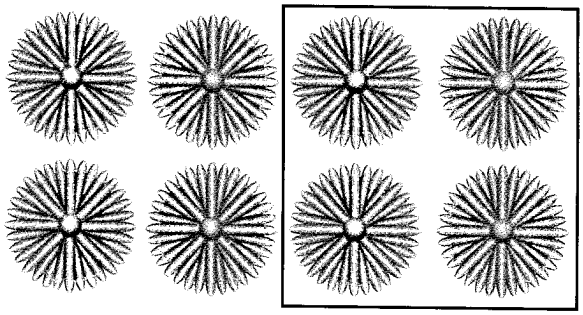


$\frac{3}{10}$

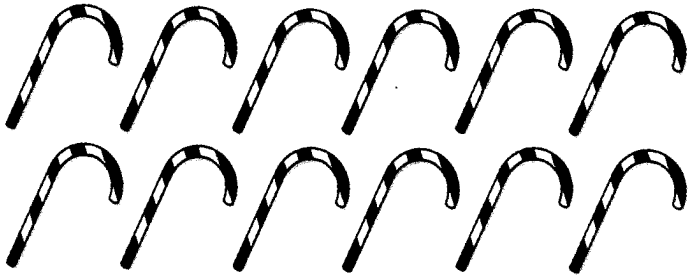


$\frac{2}{5}$

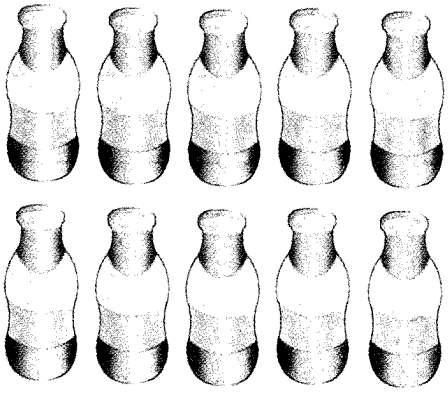
8. Fill in the blanks.

(a) 

I gave away $\frac{4}{8}$ of the flowers. It is the same as $\frac{\square}{2}$ of the flowers.

(b) 

I want to give away $\frac{2}{3}$ of my candy canes. It is the same as $\frac{\square}{12}$ of the candy canes.

(c) 

I recycled $\frac{6}{10}$ of the bottles. It is the same as $\frac{3}{\square}$ of the bottles.