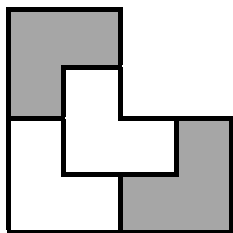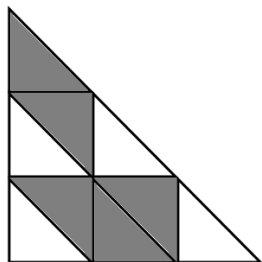# Unit 6: Fractions and decimals (week 1 of 3)
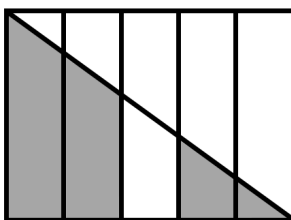
1) What fraction of each shape is shaded?
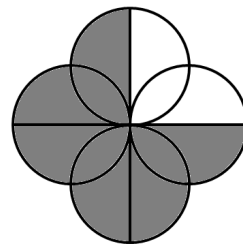
$$\frac{2}{4} = \frac{1}{2}$$ _____

$$\frac{5}{9}$$ _____

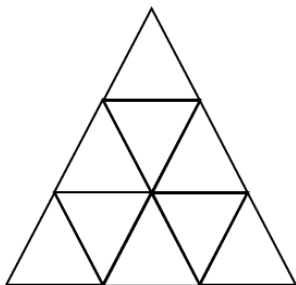$$\frac{2}{5}$$ _____

$$\frac{3}{4}$$ _____

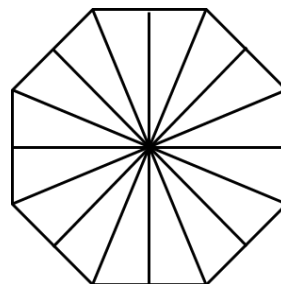2) Shade in the given fraction of the area of each shape.

Any 6 sections shaded

$$\frac{1}{3}$$

Any 3 sections shaded

$$\frac{3}{5}$$

$$\frac{3}{4}$$

Any 12 sections shaded

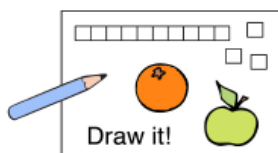3) Identify the fraction that each arrow points to and place these fractions on the number line.

Can you place any other fractions?

$$\frac{3}{10}$$ $$\frac{4}{8}$$ $$\frac{3}{5}$$ $$\frac{3}{4}$$

0   $$\frac{1}{5}$$ 1 $$\frac{9}{10}$$ $$\frac{11}{10}$$

Next Step for Depth

Draw it!
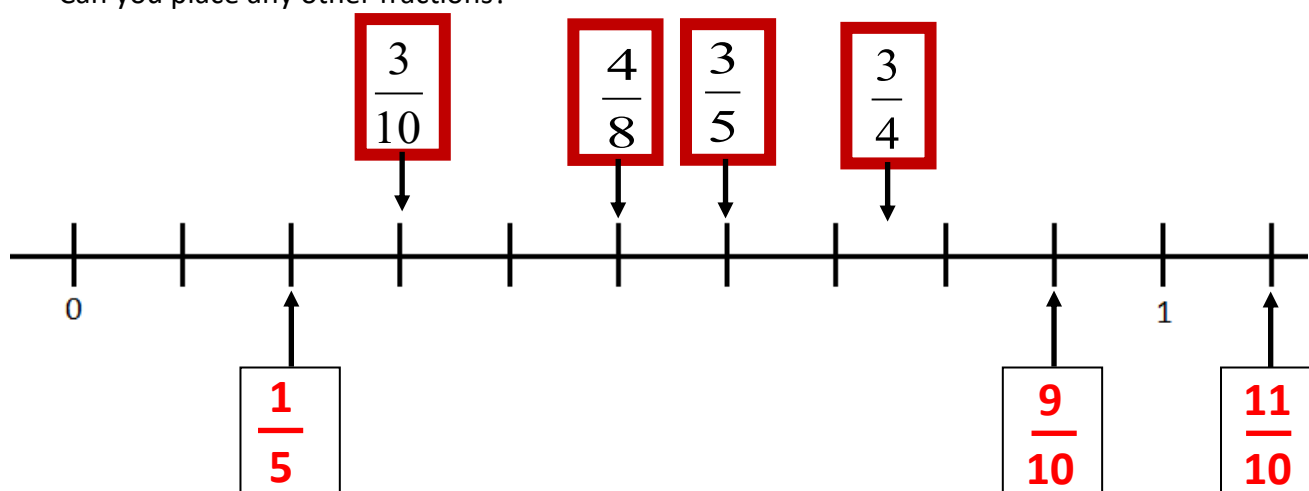
How many different ways can you represent this fraction?

How will you explain each representation?

$$\frac{3}{8}$$

Unit 6: Fractions and decimals (week 2 of 3)

1) Label each diagram showing the value as a fraction and as a decimal.

a) If the whole bead string represents 1, what is the value of twenty three beads?
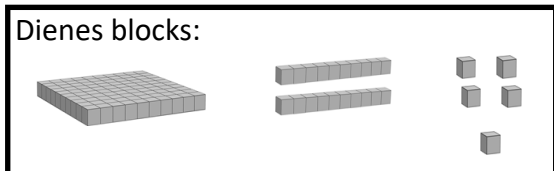
$$\frac{23}{100} \quad 0.23$$

b) If the whole bead string represents 1, what is the value of seventy five beads?

$$\frac{75}{100} \qquad 0.75 \qquad \frac{3}{4}$$

2) Represent the number **0.125** in a variety of ways.

Dienes blocks:

Counters:

Ones	tenths	hundredths	thousandths
	○	● ●	○ ○ ○

There is **one** tenth, **two** hundredths and **five** thousandths.

The number is said as **zero point** **one two five** .

0. **125** = **0.1** + 0.02 + **0.005**

$$\boxed{\frac{1}{10}} + \boxed{\frac{2}{100}} + \boxed{\frac{5}{1000}} = \boxed{\frac{125}{1000}}$$

3) Represent the number **0.405** in a variety of ways.

Dienes blocks:
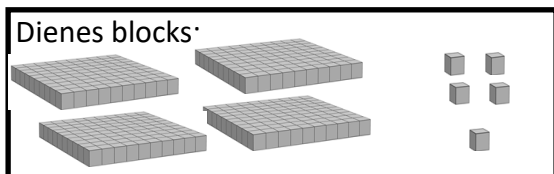
Counters:

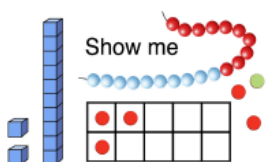| Ones	tenths	hundredths	thousandths
	○ ○ ○		○ ○ ○

There are **four** tenths and **five** thousandths. The is a place holder in the **tenths** place.

The number is said as **zero point** **four zero five** .

0. **405** = **0.1** + **0.005**

$$\boxed{\frac{4}{10}} + \boxed{\frac{5}{1000}} = \boxed{\frac{405}{1000}}$$

Next Step for Depth

Show me

Choose your own decimal numbers and represent them in las many different ways as you can.

What do the different representations show you about the number?

Unit 6: Fractions and decimals (week 3 of 3)

1) Choose a symbol to make each statement correct.

>	**<**	**=**
is greater than	is less than	is equal to

0.32 (**<**) 0.324   0.761 (**>**) 0.716   0.053 (**>**) 0.05

2) Choose a symbol to make each statement correct.

>	**<**	**=**
is greater than	is less than	is equal to

$\frac{5}{6}$ (**>**) 0.625   0.405 (**>**) $\frac{2}{5}$ $\frac{373}{1000}$ (**=**) 0.373

3) Place these fractions and decimals on the number line

$\frac{3}{20}$ **0.3** $\frac{65}{100}$ **0.825**

0 ——————————————————————————— 1

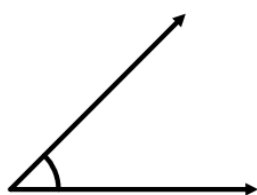Choose some interesting fractions and decimals to place on the number line.
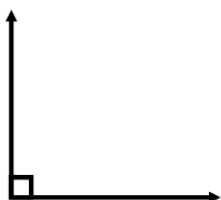

Next Step for Depth

Clearly explain your answers to question 2 using representations of the decimals and fractions to support you decisions.
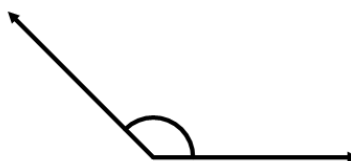
Unit 7: Angles (week 1 of 2)

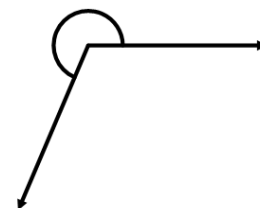1) Complete the descriptions of each type of angle.

An **acute** angle is

less than __**90°**__

A **right** angle

is equal to __**90°**__

An **obtuse** angle is between

__**90°**__ and __**180°**__

A **reflex** angle is

greater than __**180°**__

2) For each angle, match them to the correct size.

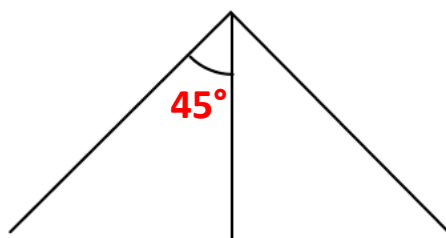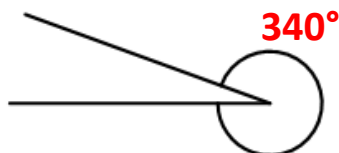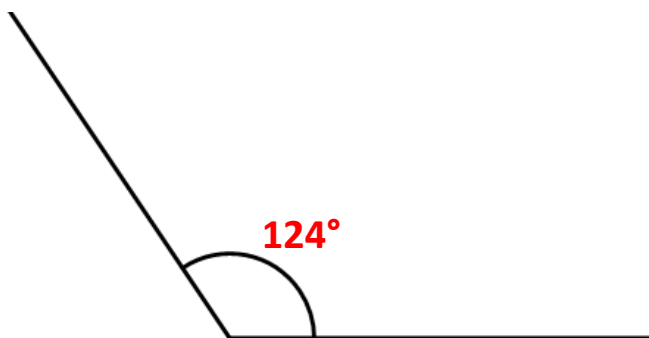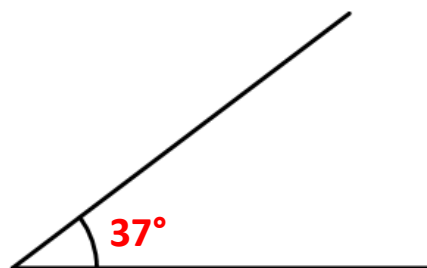| 10°	100°	340°	45°	160°

340°

45°

100°

160°

10°
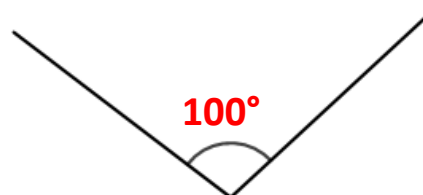
3) Estimate each angle and then use a protractor to measure and check your estimate.

124°

37°

Estimate of angle_____

Measurement of angle __**124°**__

Estimate of angle_____
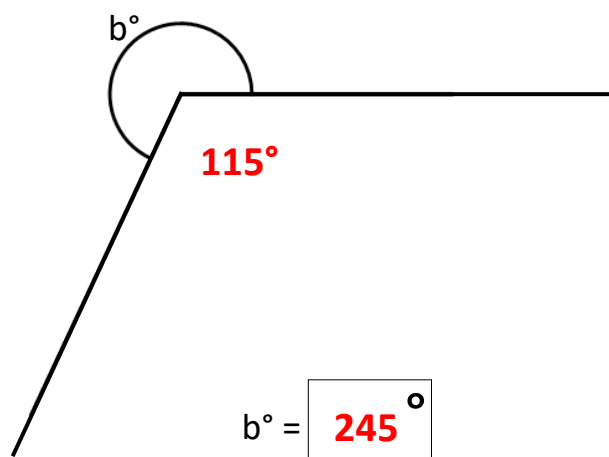
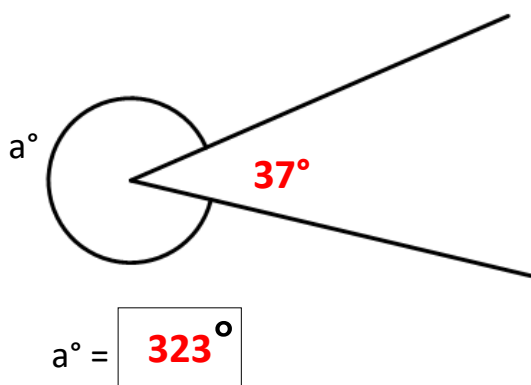Measurement of angle __**37°**__

Next Step for Depth

Make a poster warning against all the possible mistakes that can easily be made when using a protractor. Include Top Tips for accurate measuring with a protractor.

Unit 7: Angles (week 2 of 2)

1) Work out the size of each of these reflex angles.

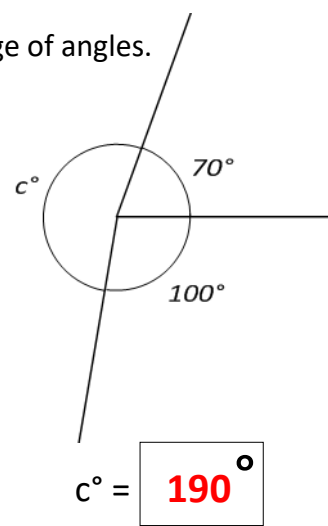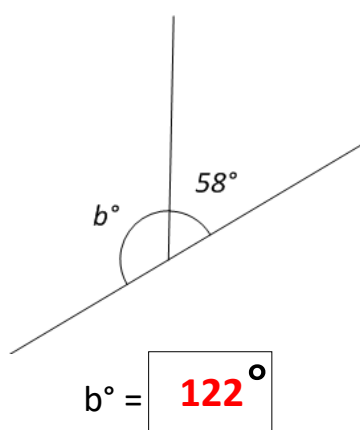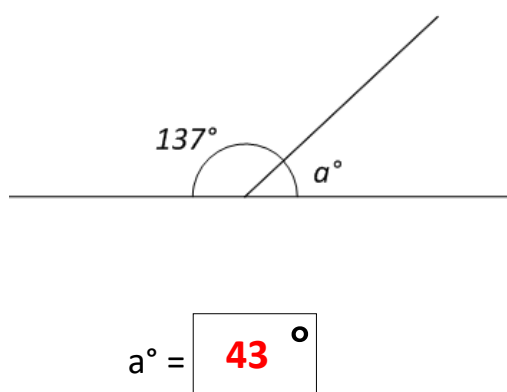b°

a°

37°

115°

a° = **323** °

b° = **245** °

2) Draw and label the following (use the notes page at the back if there is not enough room).

a) an angle of 27° b) an angle of 132° c) an angle of 250°

3) Work out the missing angles. Do not measure, instead use your knowledge of angles.

137°   a°

58°   b°

c°   70°

100°

a° = **43** °

b° = **122** °

c° = **190** °

Next Step for Depth

● ● ●	1 2 3	
● ● ●	1 3 2	
● ● ●	2 1 3	
● ● ●	2 3 1	
● ● ●	3 1 2	
● ● ●	3 2 1	

There are three angles on a straight line.
One of them is a right angle.
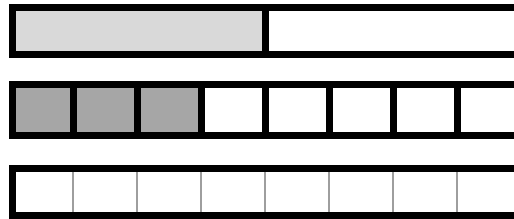Another is a multiple of 5.

What are possible values of the three angles? Draw them at the back of the book.

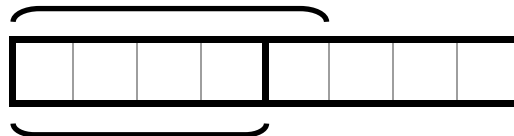How many different answers can you find? Can you find them all?

Unit 8: Fractions, decimals and percentages (week 1 of 3)

1) Use the bar models to show the answer to each calculation.

$$\frac{1}{2} + \frac{3}{8} = \boxed{\frac{7}{8}}$$

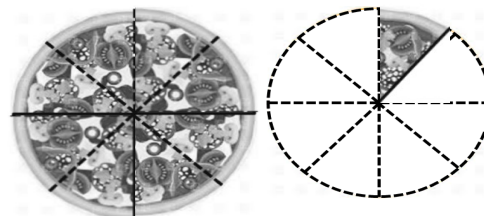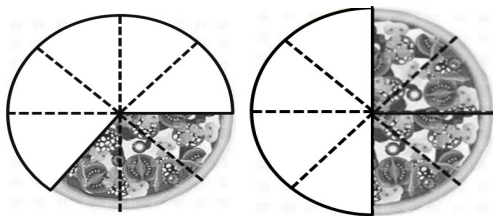$$\frac{5}{8} - \frac{1}{2} = \boxed{\frac{1}{8}}$$

2) Doris eats five eighths of one pizza and half of another pizza.

This diagram shows what was left after she'd eaten:

How much pizza did she eat altogether?

Show on this   diagram:

Record as an **improper fraction**:

Doris ate $\boxed{\dfrac{9}{8}}$ of the pizza.

Record as a **mixed number**:

Doris ate $\boxed{1\frac{1}{8}}$ of the pizza.

3) A mug holds $\frac{1}{4}$ of a litre. How much will seven mugs hold?

Record as an improper fraction and a mixed number.

$$\frac{1}{4} \times 7 = \frac{7}{4} = 1\frac{3}{4}$$

Next Step for Depth

four fifths less than one and a half

What's the same?

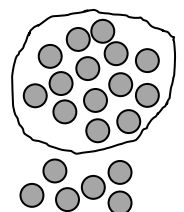$$\frac{1}{10} \times 7$$

$$1\frac{1}{2} - \frac{4}{5}$$

What's different?

one half plus one fifth
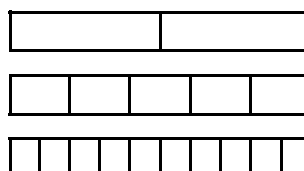
fourteen out of 20 objects

Unit 8: Fractions, decimals and percentages (week 2 of 3)

1) **There are 64 apples**. Answer each question with either a fraction or a whole number:

   a) $\frac{3}{4}$ *of the apples are green and the others are red.*

   How many apples are green? **48**   What fraction of apples are red? $\frac{1}{4}$

   How many apples are red? **16**

   c) $\frac{1}{8}$ *of the apples are rotten and the others are not.*

   How many apples are rotten? **8**   What fraction of apples are not rotten? $\frac{7}{8}$

   How many apples are not rotten? **56**

   c) *16 apples are in a basket and the others are in a box.*

   What fraction of the apples are in the basket? $\frac{1}{4}$ **or** $\frac{16}{64}$
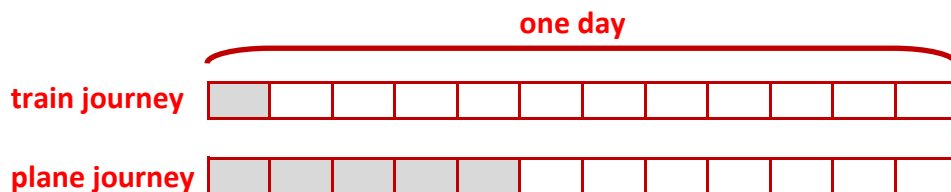
   What fraction of the apples are in the box? $\frac{3}{4}$ **or** $\frac{8}{32}$

2) Represent each problem and then calculate the answer (use the notes page at the back is needed).

a) Amy works out that her train journey takes $\frac{1}{12}$ of a day. She has a plane journey that is five times longer. What fraction of a day will the plane journey take?

one day

train journey

plane journey

$\frac{1}{12} \times 5 = \frac{5}{12}$
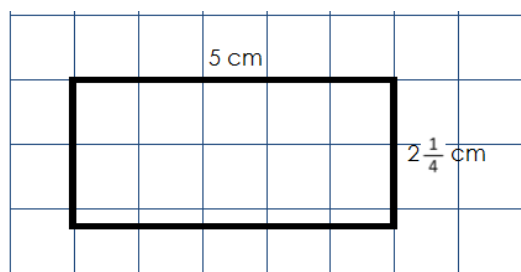
The plane journey will take $\frac{5}{12}$ of a day.

b) A jug holds $\frac{2}{3}$ of a litre of liquid. How much liquid can four jugs hold?

$=$ $\frac{2}{3} \times 4 = \frac{8}{3} = 1\frac{2}{3}$

Four jugs will hold **1** and $\frac{2}{3}$ of a litre
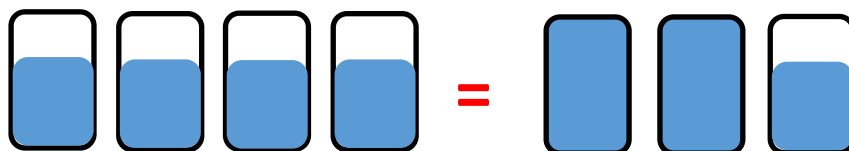
3) Calculate the area and the perimeter of this rectangle:

5 cm

$2\frac{1}{4}$ cm

Area = **$11\frac{1}{4}$** cm²
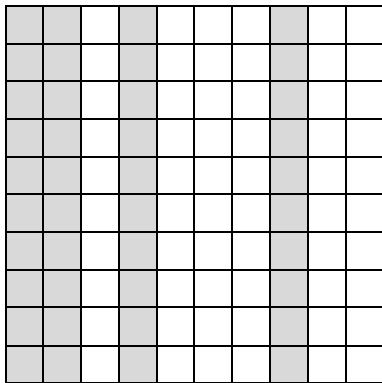
Perimeter = **$14\frac{1}{2}$** cm

Next Step for Depth

Maths story

Generate word problems involving the multiplication of a fraction by a whole number.

Unit 8: Fractions, decimals and percentages (week 3 of 3)

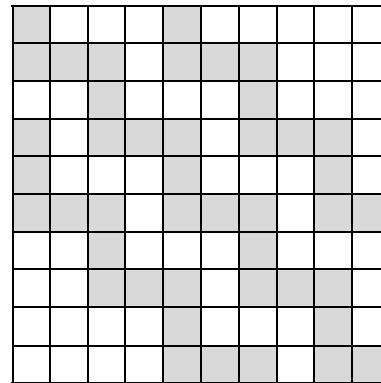1) What percentage of each grid is shaded? Write each percentage as a fraction and a decimal.

	Percentage shaded: **40%**
	Fraction shaded: **40/100**

This can represent the decimal: **0.4**

	Percentage shaded: **43%**
	Fraction shaded: **43/100**

This can represent the decimal: **0.43**

Pupils may have simplified the fractions and any equivalent fractions should be accepted.

2) Match each card to the percentage that is equivalent to the decimal or fraction. There is more than one for each percentage.

a) 2% 0.02 $\dfrac{2}{100}$

b) 22% 0.22 $\dfrac{22}{100}$

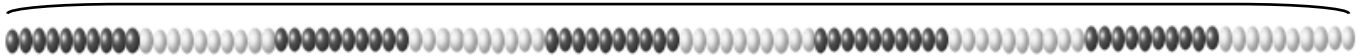c) 20% 0.2 $\dfrac{20}{100}$ $\dfrac{2}{10}$ $\dfrac{1}{5}$

3) Find percentages of amounts. Mark the bead string and complete the statements.

a) What is 20% of 50?

If the whole bead string represents 50 then each bead represents a half and so twenty beads has a value of ten
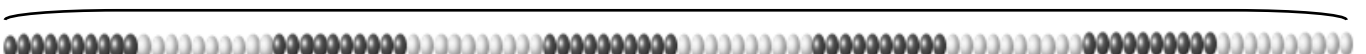
50

20% of 50 = **10**

b) What is 75% of 80?

80

75% of 80 = **60**

75% is three quarters. If the whole bead string represents 80 then half the bead string is 40 and a quarter of the bead string represents 20. Therefore, three quarters or 75% is equal to 60.

Next Step for Depth   Which of these is the odd one out? How many different answers can you think of?
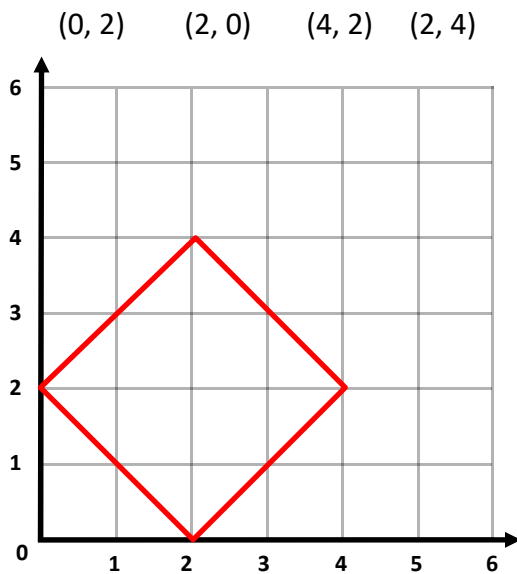
Odd one out

$\dfrac{3}{5}$ 0.5 $\dfrac{6}{100}$ 65%

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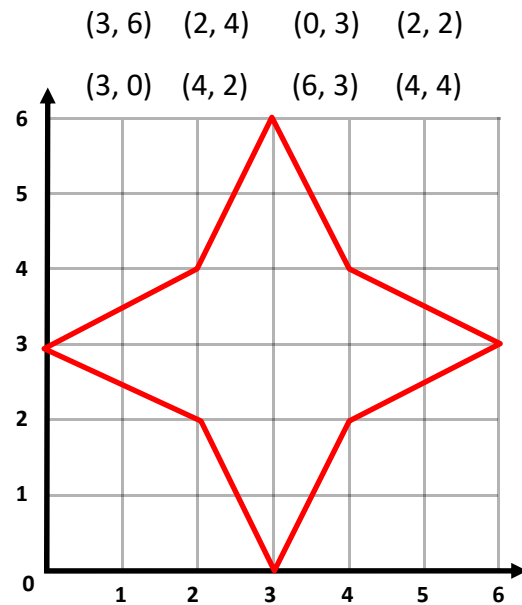# Unit 9: Transformations (week 1 of 2)

1) Plot the given coordinates and join the points in order with straight lines to create a shape.

(0, 2)   (2, 0)   (4, 2)   (2, 4)

(3, 6)   (2, 4)   (0, 3)   (2, 2)
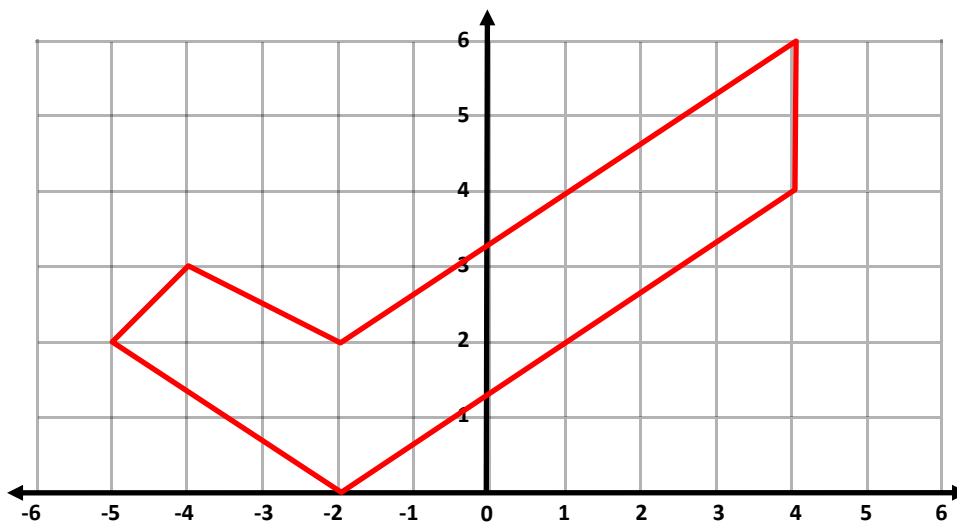(3, 0)   (4, 2)   (6, 3)   (4, 4)

Describe the shape:

A special rectangle, a square.
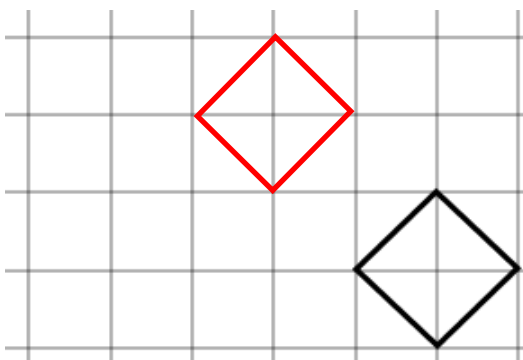
Describe the shape:

An irregular octagon.
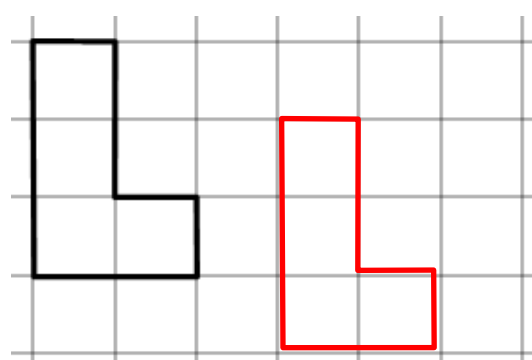
Re-

(4, 4)   (4, 6)   (−2, 2)
(−4, 3)   (−5, 2)   (−2, 0)

Describe the shape:

An irregular hexagon.
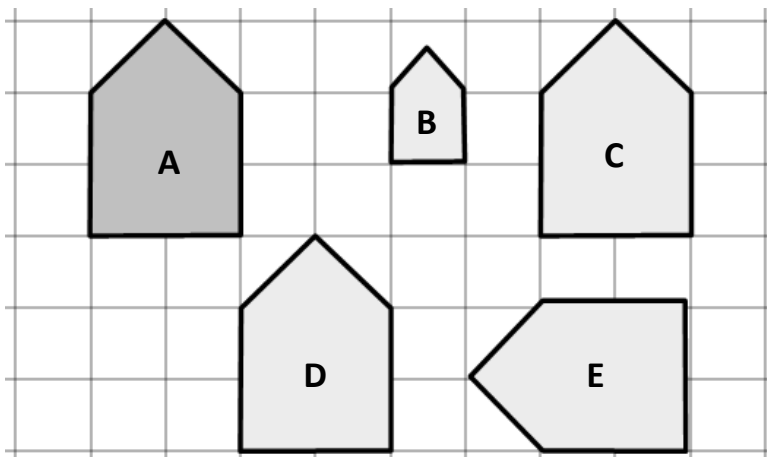
2a) Translate this shape **two left** and **two up**

2b) Translate this shape **three right** and **one down**

Unit 9: Transformations (week 1 of 2)

3)   Which of these is a translation of shape A?   Write the letter of the shape and describe the translation.
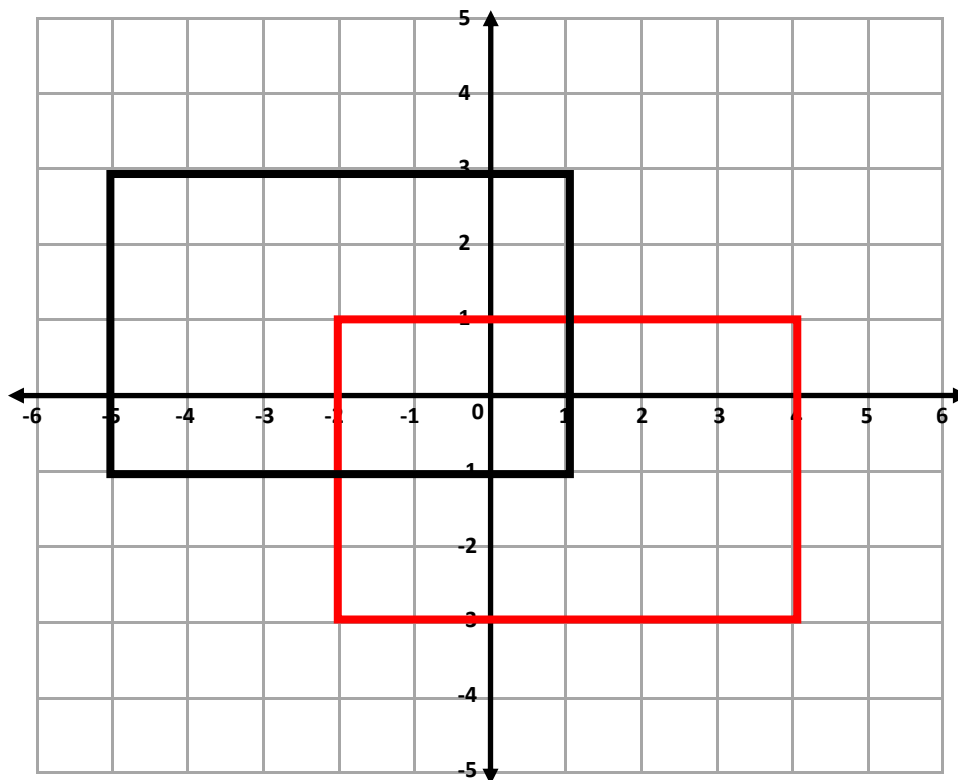
C   **6 right**

D   **2 right**

3 down

4)   Plot these coordinates and join each point with a straight line segment to make a shape.
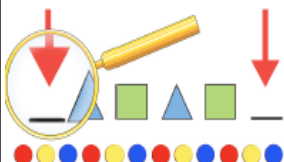
(1, 3)   (−5, 3)   (−5, −1)   (1, −1)

Then translate the shape three right and two down. Record the coordinates of each vertex:

(4 , 1)   (-2 , 1)   (-2 , -3)   (4 , -3)
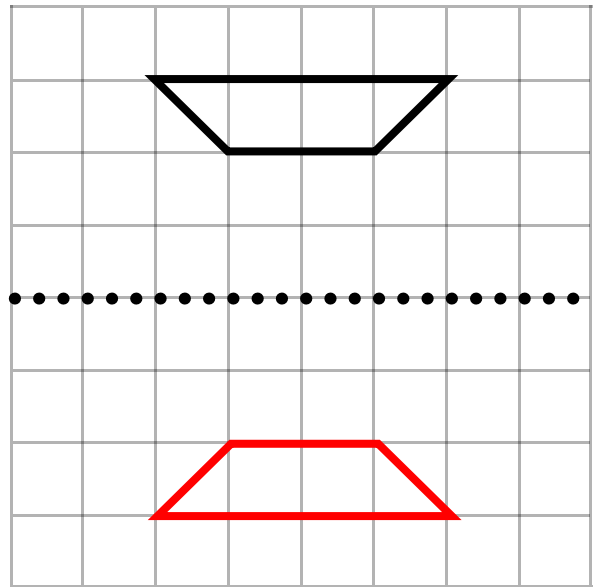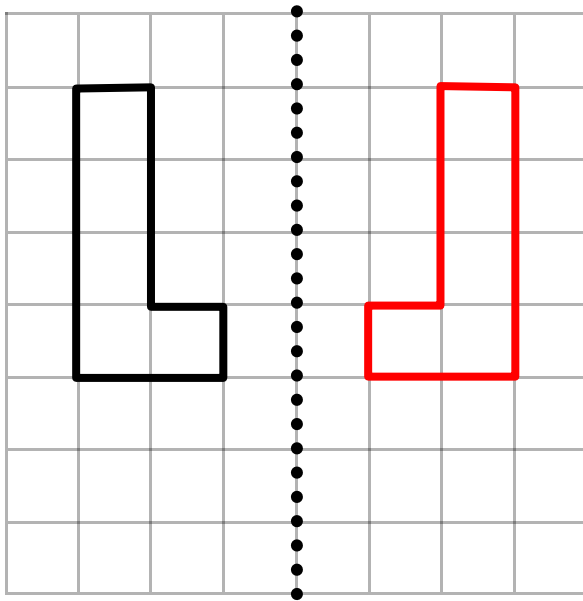
Next Step for Depth

What pattern do you notice with the coordinates?

What is the difference between the numbers in the coordinates of the vertices of the shape before and after it has been translated?

Unit 9: Transformations (week 2 of 2)

1) Reflect each shape in the dotted mirror line.

2) Reflect shape A in the y-axis and label it shape B. Then reflect shape A and shape B in the x-axis and label them C and D. Record the co-ordinates of the vertices of each shape.

Co-ordinates of shape **B**:

(-3, 4) (0, 2)

(-1, 0) (-4, 2)

Co-ordinates of shape **A**:

(3, 4) (0, 2)

(1, 0) (4, 2)

Co-ordinates of shape **C**:

(-3, -4) (0, -2)

(-1, 0) (-4, -2)

Co-ordinates of shape **D**:

(3, -4) (0, -2)

(1, 0) (4, -2)