

Home Learning: Year 6 Maths **wk/c 22nd June**

We have set out each week's learning as a series of suggested daily activities. However, the time may look very different for each family. Building in time to look after each other, be physical, creative and relax is as important as completing the set activities. You need to decide what works for you and your family. You could do more of the activities on one day and fewer on another, or you may find it helpful to have a more structured approach. It may help to give clear times for doing activities and clear times for breaks. You will also notice that some of the science, history and DT activities are the same and therefore can be done as a family.

Year 6	Day 1	Day 2	Day 3	Day 4	Day 5
Factual Fluency	Division facts to 12 https://uk.ixl.com/math/year-6/division-facts-to-12	Division facts to 12 https://uk.ixl.com/math/year-6/division-facts-to-12	Division by 1-digit numbers https://uk.ixl.com/math/year-6/divide-by-one-digit-numbers	Division by 1-digit numbers https://uk.ixl.com/math/year-6/divide-by-one-digit-numbers	Reading tables https://uk.ixl.com/math/year-6/read-a-table
Four Days of Reasoning (Monday-Thursday)	<p>Summer Term Week 9(w/c 22nd June) https://whiterosemaths.com/homelearning/year-6/</p> <p>Extension Tasks are below for pupils who normally work with Mrs T OR who have completed the daily task and feel like a challenge</p>	<p>Click onto the link each day. There is a video to watch for each day and then activities to complete. White Rose is an excellent resource and one often used by teachers in our schools. As you support your child, you will see that it presents concepts clearly and incrementally. The lessons will start very simply – however, we do not recommend that you race ahead; spend time on the straightforward before moving onto more complex, abstract ideas.</p> <p>If your child struggles with maths, they could work on the learning set for year groups lower down the school.</p> <p style="text-align: center;">Worksheets and answers can be found below.</p>			
Friday	Revise aspects of this week's learning that you are not sure of sure of. You can simply repeat a lesson or revisit questions and redo.				

Home Learning: Year 6 English

Year Six	Day 1	Day 2	Day 3	Day 4 & Day 5
Reading	Make sure you have some quiet time for daily reading of your own book. Record your reading in your Reading Record as you normally do. Check out https://www.ccht.rbkc.sch.uk/learning-at-home/story-time/ for some on-line stories and some good book recommendations.			
Writing & thinking	<p>LO: to respond to performance poetry</p> <p>Watch the poet Karl Nova perform his poem ‘Poetry?’</p> <p>Think about the following questions: Why do you think he has chosen to punctuate the title in this way?</p> <p>Do you think this is an example of poetry? Do you think everyone would see this as poetry? Why or why not?</p> <p>Task</p> <p>Read the poem Poetry? (see below) and answer the reading for writing questions.</p> <p>Look at the resources below. It is Karl Nova’s Rhythm and Poetry front cover. He was awarded the CLPE (Centre for Literacy in Primary Education) poetry prize.</p> <p>Think about the following questions:</p> <p>What is rhythm?</p> <p>Why do you think Karl Nova has chosen this title for the collection?</p> <p>What do you expect from the rest of the poems in the collection?</p> <p>Read an extract from an interview with Karl Nova by Books for Keeps (see below) to learn more about his earlier life and influences.</p>	<p>LO: perform a poem</p> <p>Watch Karl Nova explain why he thinks poetry is important.</p> <p>Watch Karl Nova perform his poetry Change for National Poetry Day 2018.</p> <p>Read Change in Resources.</p> <p>Think about the following questions: which words are the most important? Which words does Karl Nova emphasise/slow down/speed up?</p> <p>Thinking</p> <p>Answer the reading for writing questions on Change in Resource 2B.</p> <p>Performance</p> <p>Read Change aloud, considering your tone, facial expression, volume and actions.</p>	<p>LO: to compose a poem</p> <p>Read Change in from previous day. You will be writing your own version of this poem. The poem repeats the first three lines and then describes four main changes:</p> <ul style="list-style-type: none"> • <i>Writing from notebooks to his mobile phone because times have changed</i> • <i>The Earth moving and our lives growing</i> • <i>The seasons changing</i> <p>• <i>Change being quick and difficult to describe</i></p> <p>Make a mind map about 4-6 changes in your life, e.g. moving to secondary school. Write your own poem about change using the beginning of Karl Nova’s poem. The resource below will help you organise your ideas. Read your poem aloud, thinking about how Karl Nova read his poem Change.</p>	<p>LO: to plan, write and edit a poem</p> <p>Watch Karl Nova perform his poem Four Seasons.</p> <p>Read Four Seasons in Resource 4A.</p> <p>What does Karl Nova mean by ‘covering the ground like a shawl’?</p> <p>Write down/highlight examples of poetic devices. Think about rhyming, syllables, simile, personification and the structure and order of the stanzas (verses).</p> <p>Write a plan for your version of Four Seasons. Think about personification, similes and other poetic devices Karl Nova uses to describe each season.</p> <p>Write your version of the poem Four Seasons.</p> <p>Edit your poem using ARMS and CUPS in resources below.</p> <p>Can you think of a more powerful simile?</p> <p>Has your poem followed the same rhythm as Karl Nova’s poem?</p> <p>Publish your poem. Choose one of these publishing sheets or create your own publishing sheet by creating a border showing all four seasons.</p> <p>Read your poem aloud, thinking about how Karl Nova read his poem Four Seasons</p> <p>Remember that if you are still learning at home you can upload your work (and performances) to ClassDojo.</p>

Home Learning: Year 6

Curriculum

Day 1	Day 2	Day 3	Day 4	Day 5
Geography	Science	History	RE	DT/Spanish
<p>LO: Discuss and prioritise Biomes Which biome is the most important?</p> <ul style="list-style-type: none"> ● Watch a video on biomes here. ● Think about which biome you think is the most important in the world and give three reasons why. ● Create a poster by drawing your chosen biome and an animal you would find in this biome. <p>Add the answers to the questions in resources below onto your poster.</p>	<p>LO Apply classification skills Design, sketch, name & describe a new creature (see support page for an example)</p> <ul style="list-style-type: none"> ● Include: Name and kingdom Phylum & class Habitat and diet Description of its physical features (as in previous session) 	<p>LO: Research Stonehenge Check this site and find out key facts about Stonehenge.</p> <ul style="list-style-type: none"> ● Create a visitor's guide to Stonehenge to persuade someone in your house to visit it 	<p>LO: What do the Miracles of Jesus teach us? Read the Bible story below and watch the video about the Miracle of the Feeding of the 5,000. https://www.youtube.com/watch?v=uupg0V-17NU</p> <p>Then answer the questions in your books.</p>	<p>Spanish Watch the videos and learn about some jobs in Spanish! https://www.youtube.com/watch?v=DV3Z2iKCKMs https://www.youtube.com/watch?v=JYBG-HwpyFc Can you say in English what each of the following jobs are? Some of them are really easy!! profesor, doctor, enfermera, dentista, actor, granjera, futbolista, panadero, cocinera, piloto, policía, bombero, astronauta, mecánico, pintor, camarero, arquitecto, juez, fontanero, sastre, jardinera, músico, taxista</p> <p>DT Sculptural Birds You will need: Corrugated cardboard/ Foamboard Paper Mark making materials- your choice Wire, Scissors Glue/Sellotape Sculptural Birds - One of the positive aspects of the lockdown is that we have seen a return of many birds into our gardens and open spaces. Here's how to make your own (see instruction sheet below).</p> <ul style="list-style-type: none"> ● Cut an egg/oval shape from a piece of firm cardboard corrugated works well – look for packaging materials ● Next, you need to make and attach wire legs –you may need to play around with this for a while so that your bird stands up. ● Using as many mark-making materials as you like to draw a series of feathers onto plain paper – make sure you vary the size, shapes and colours. When you have finished, either tear around or cut out your feathers ready to collage onto your bird and make it come to life!
Everything is Interesting – are you ready for a challenge?				

Area and perimeter

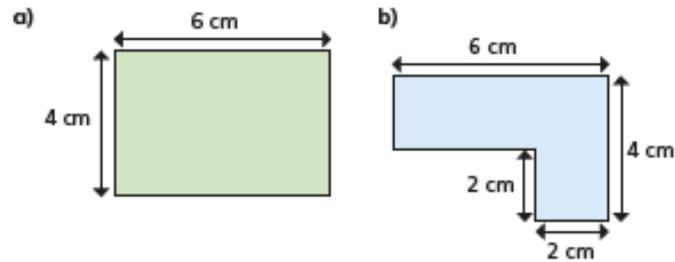
1 Use the words to complete the sentences.

-

_____ is the amount of space _____ a two-dimensional shape. It can be measured in units such as _____ or _____

_____ is the distance _____ a two-dimensional shape. It can be measured in units such as _____ or _____

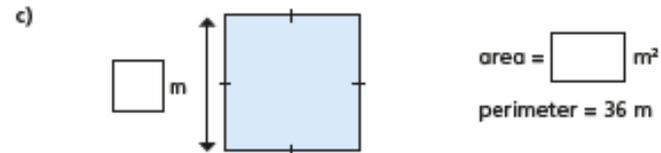
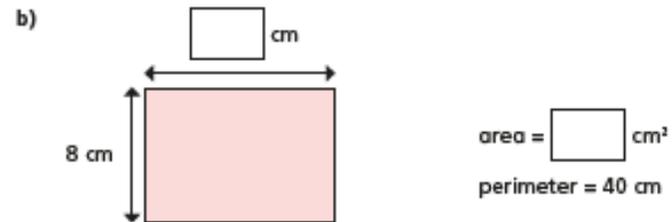
2 Work out the areas and perimeters of the shapes.



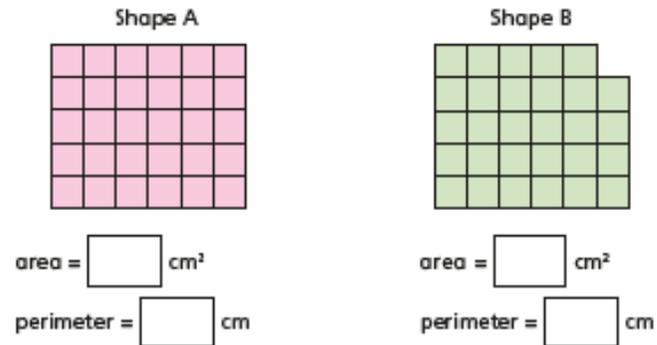
perimeter = cm
area = cm²

perimeter = cm
area = cm²

3 Work out the missing values.



4 Work out the areas and perimeters of the shapes.



What do you notice?



5



Tommy

If you start with a rectilinear shape, when you increase the area, the perimeter will increase.

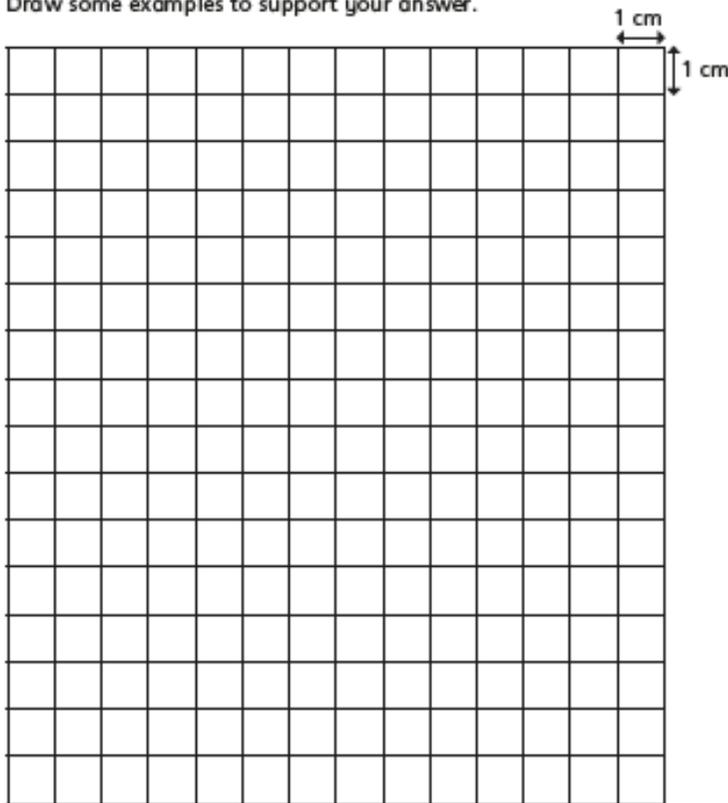


Amir

It depends on the shape.

Who do you agree with? _____

Draw some examples to support your answer.

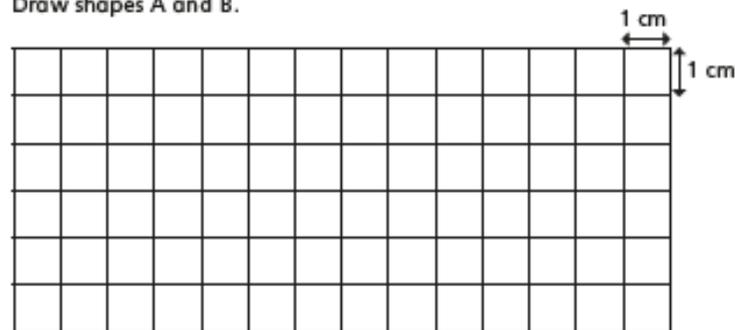


6

Two rectilinear shapes, A and B, each have an area of 12 squares.

- Shape A has the largest perimeter possible.
- Shape B has the smallest perimeter possible.

Draw shapes A and B.



What do you notice?

7

Mr Jones has 50 m of fencing.

He wants to make a rectilinear enclosure using all the fencing.

- a) Draw an example of a shape he could make. Give units on your diagram.



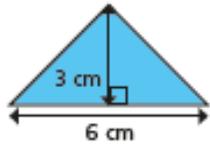
b) What is the greatest possible area of the enclosure?

c) What is the smallest possible area of the enclosure?



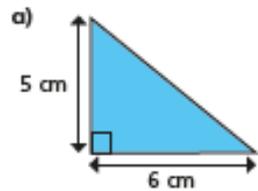
Area of a triangle (3)

1 Calculate the area of the triangle.

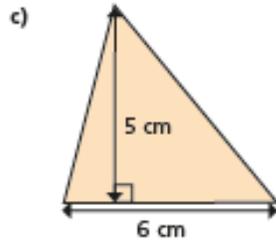


area = cm²

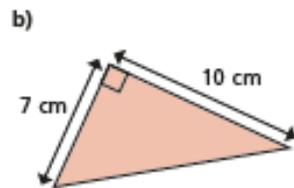
2 Calculate the area of the triangles.



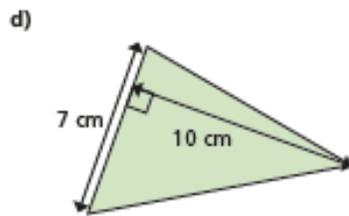
area = cm²



area = cm²

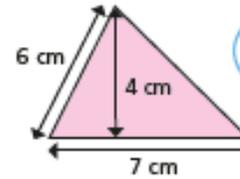


area = cm²



area = cm²

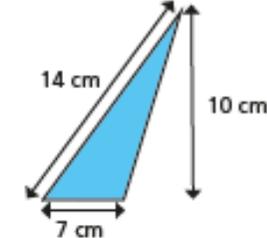
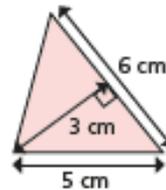
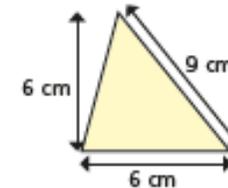
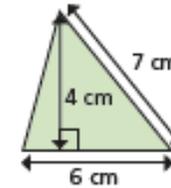
3 What mistake has Dora made?



To find the area you do
 $7 \times 6 \div 2 = 21 \text{ cm}^2$



4 Label the base of each triangle *b*.
Label the perpendicular height *h*.

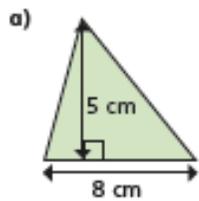


5 Are the statements always, sometimes or never true?

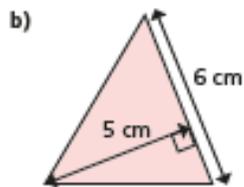
The side at the bottom of a triangle is the base.

The perpendicular height is equal to the vertical height.

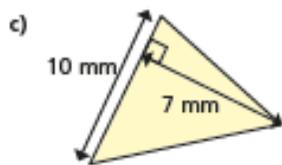
6 Calculate the area of the triangles.



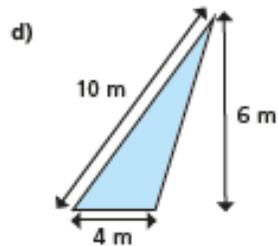
area = cm²



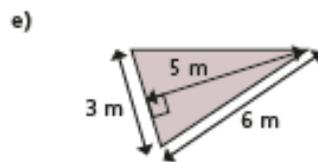
area = cm²



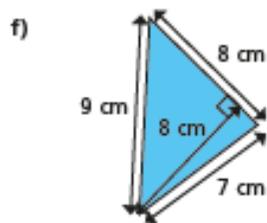
area = mm²



area = m²

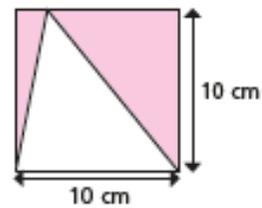


area = m²



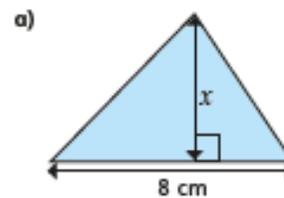
area = cm²

7 Find the area of the shaded region.

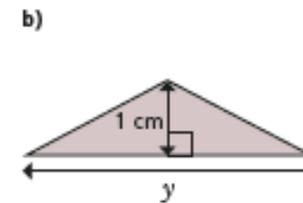


area = cm²

8 The area of each triangle is 12 cm². Find the missing lengths.

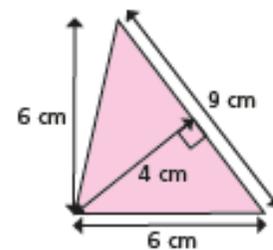


$x =$ cm



$y =$ cm

9 Show two ways you can work out the area of the triangle.

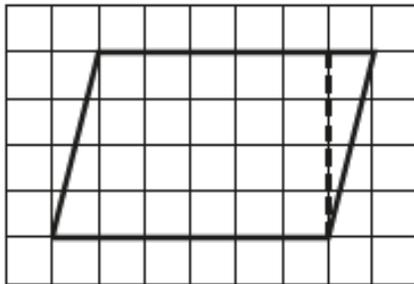


Compare answers with a partner.

Area of a parallelogram

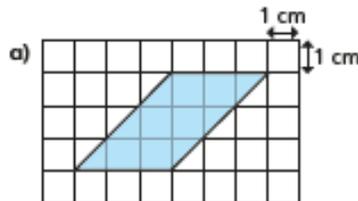


- 1 On a piece of squared paper, copy this parallelogram and cut it out.

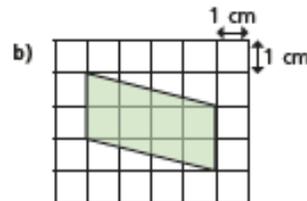


- a) Create a rectangle by cutting off the right-angled triangle and moving it.
- b) Complete the sentences.
 The area of the rectangle is squares.
 The area of the parallelogram is squares.

- 2 Calculate the areas of the parallelograms.

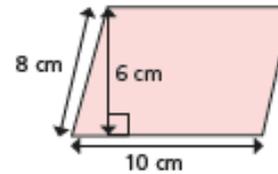


area = cm²



area = cm²

- 3 Huan is finding the area of the parallelogram.



$10 \times 8 = 80 \text{ cm}^2$

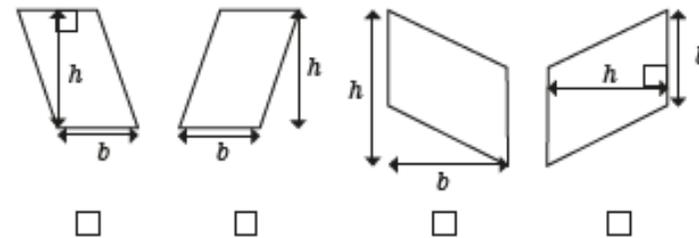
- a) What mistake has Huan made?

- b) What is the correct answer?

area = cm²

- 4 Esther has labelled the bases and heights for four parallelograms.

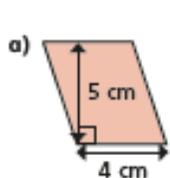
Three are correct; one is incorrect. Tick the shapes that have been correctly labelled.



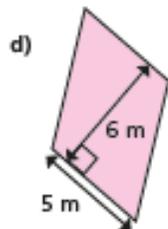
Explain to a partner why one is incorrect.



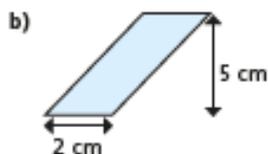
5 Calculate the areas of the parallelograms.



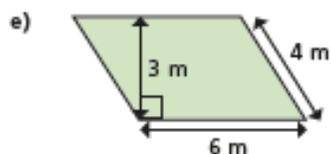
area = cm²



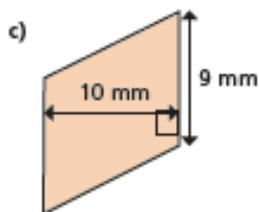
area = m²



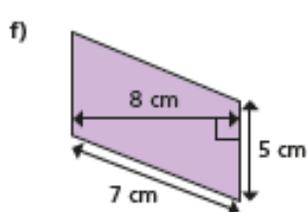
area = cm²



area = m²

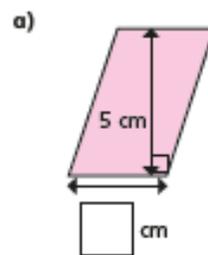


area = mm²

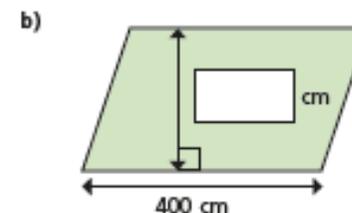


area = cm²

6 Find the missing lengths.

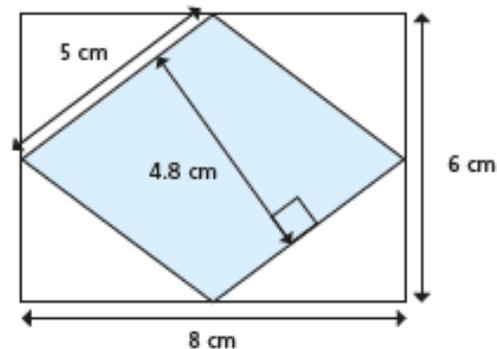


area = 15 cm²



area = 12 m²

7 Here is a rhombus inside a rectangle.



a) Calculate the area of the rhombus.

area = cm²

b)

The area of the rhombus is half the area of the rectangle. This means that it is a special triangle.



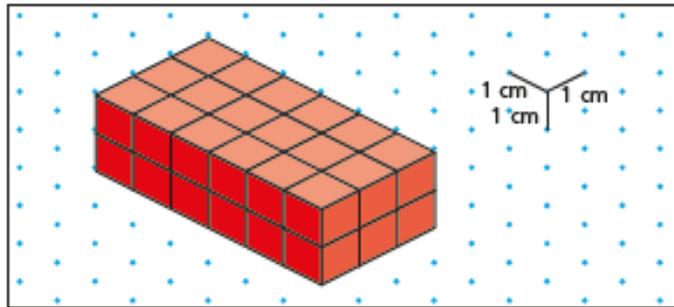
Explain to a partner why Mo is wrong.



Volume of a cuboid



1 Here is a cuboid made up of cubes.

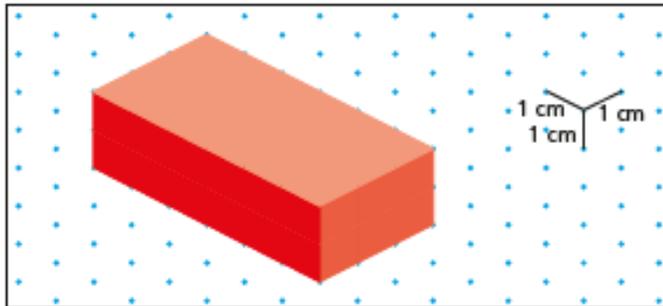


a) What is the volume of the cuboid?

volume = cm³

b) Explain your method for finding the volume.

c) What is the volume of this cuboid?

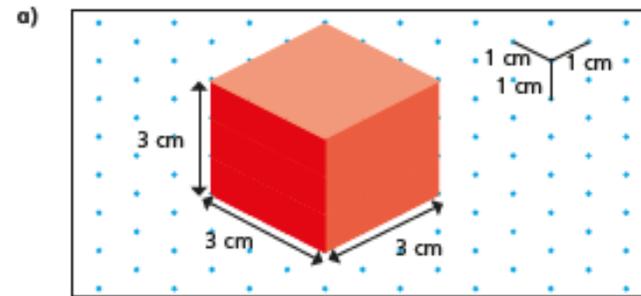


volume = cm³

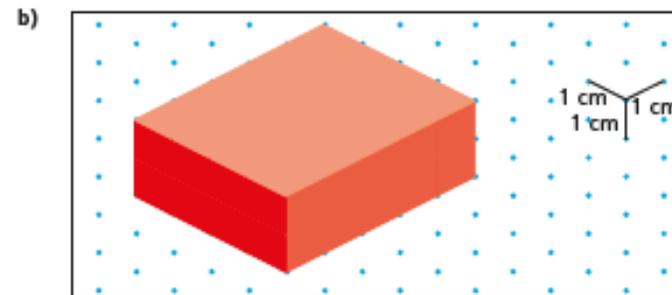
d) What is the same and what is different about the cuboids?

2 Find the volume of the cuboids.

You can make them with cubes if it helps.

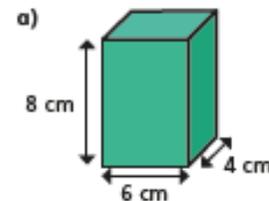


volume = cm³

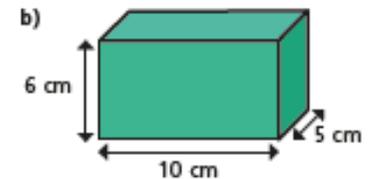


volume = cm³

3 Calculate the volumes of the cuboids.



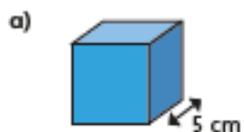
volume = cm³



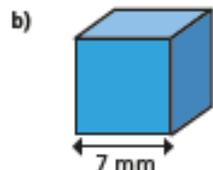
volume = cm³



4 Calculate the volumes of the cubes.

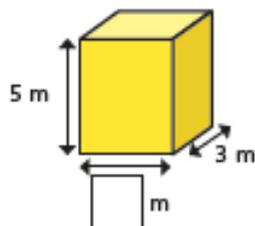


volume = cm³

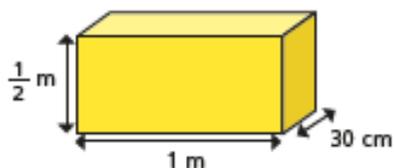


volume = mm³

5 The volume of the cuboid is 60 m³
Find the missing length.

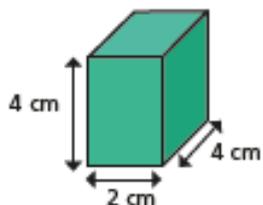


6 Calculate the volume of the cuboid.



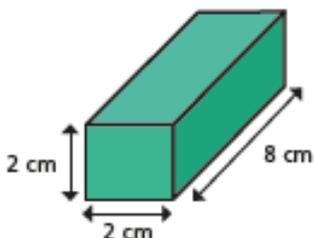
volume = cm³

7 a) Calculate the volumes of the two cuboids.



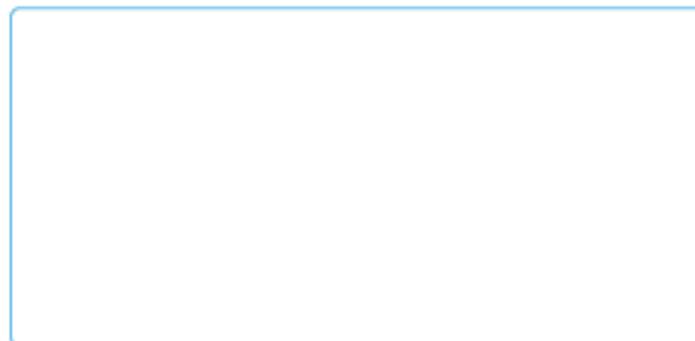
cm³

What do you notice?

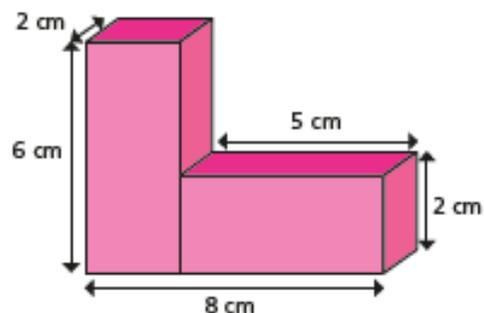


cm³

b) Draw two different cuboids that have a volume of 24 cm³



8 Calculate the total volume of the shape.



volume = cm³

Was there another method you could have used?



Answers

1)

Area and perimeter



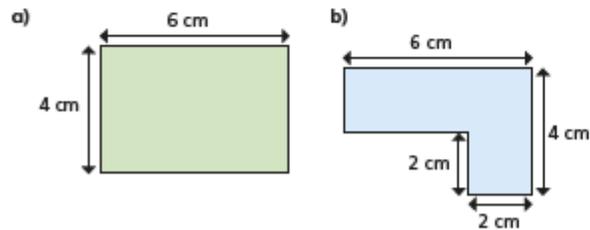
1 Use the words to complete the sentences.

- perimeter cm^2 cm m
 area m^2 inside around

Area is the amount of space inside a two-dimensional shape. It can be measured in units such as cm^2 or m^2 .

Perimeter is the distance around a two-dimensional shape. It can be measured in units such as cm or m.

2 Work out the areas and perimeters of the shapes.



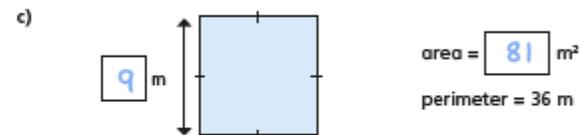
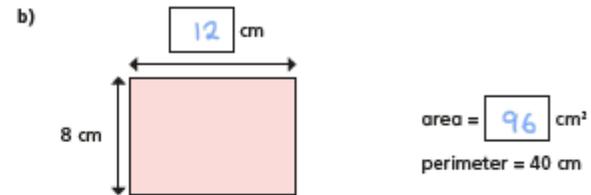
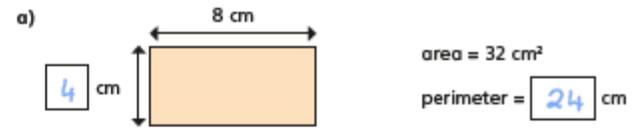
perimeter = cm

area = cm^2

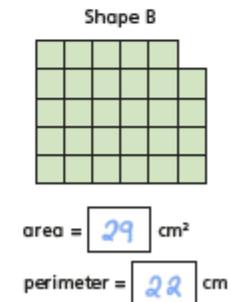
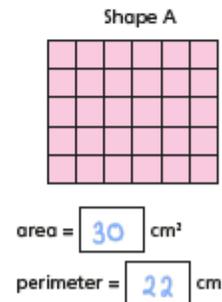
perimeter = cm

area = cm^2

3 Work out the missing values.



4 Work out the areas and perimeters of the shapes.



What do you notice?



5



Tommy

If you start with a rectilinear shape, when you increase the area, the perimeter will increase.

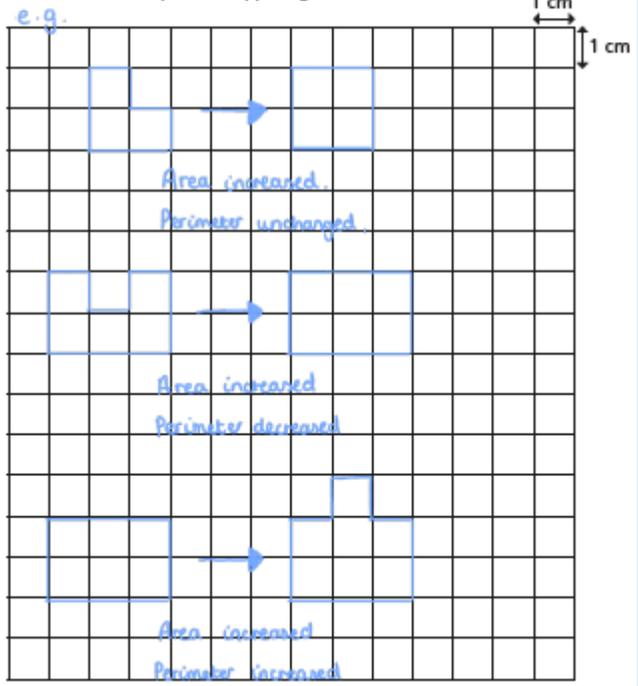


Amir

It depends on the shape.

Who do you agree with? Amir

Draw some examples to support your answer.

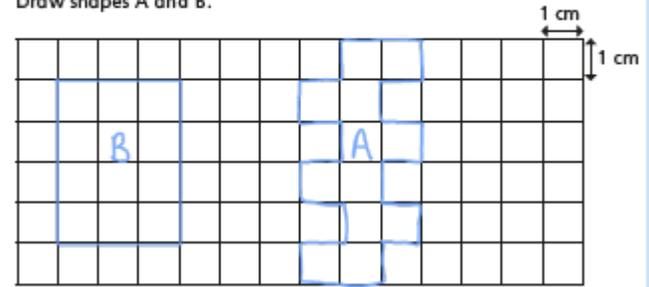


6

Two rectilinear shapes, A and B, each have an area of 12 squares.

- Shape A has the largest perimeter possible.
- Shape B has the smallest perimeter possible.

Draw shapes A and B.



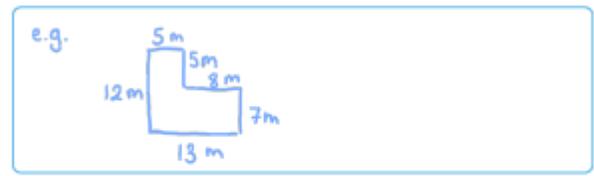
What do you notice?

7

Mr Jones has 50 m of fencing.

He wants to make a rectilinear enclosure using all the fencing.

a) Draw an example of a shape he could make. Give units on your diagram.



b) What is the greatest possible area of the enclosure? 156 m²

c) What is the smallest possible area of the enclosure? 24 m²

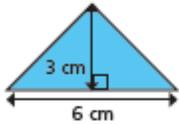


2)

Area of a triangle (3)

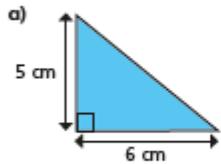


1 Calculate the area of the triangle.

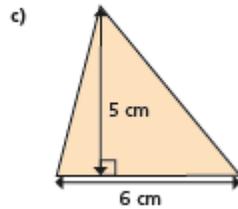


area = cm²

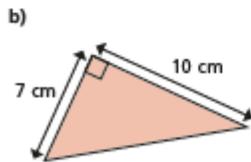
2 Calculate the area of the triangles.



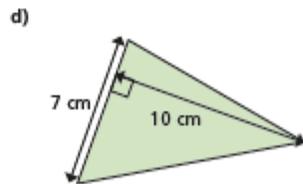
area = cm²



area = cm²

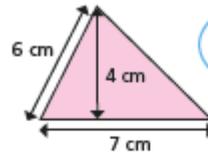


area = cm²



area = cm²

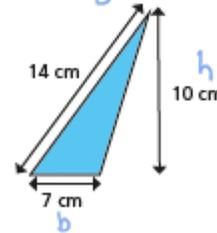
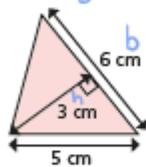
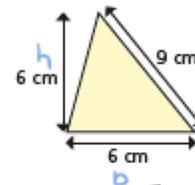
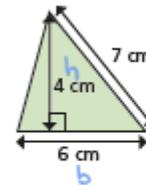
3 What mistake has Dora made?



To find the area you do
 $7 \times 6 \div 2 = 21 \text{ cm}^2$



4 Label the base of each triangle b .
Label the perpendicular height h .



5 Are the statements always, sometimes or never true?

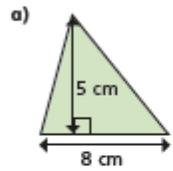
The side at the bottom of a triangle is the base.

Sometimes

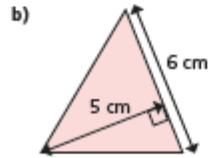
The perpendicular height is equal to the vertical height.

Sometimes

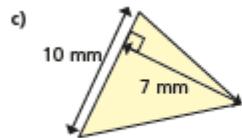
6 Calculate the area of the triangles.



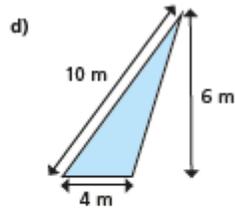
area = cm²



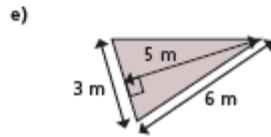
area = cm²



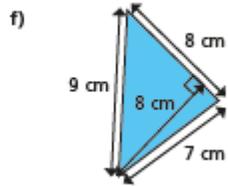
area = mm²



area = m²

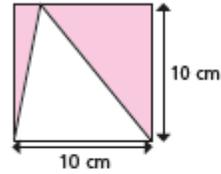


area = m²



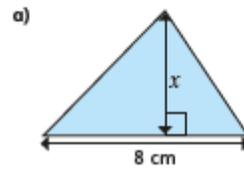
area = cm²

7 Find the area of the shaded region.

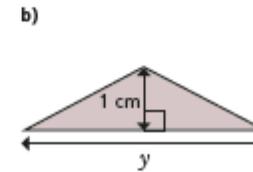


area = cm²

8 The area of each triangle is 12 cm². Find the missing lengths.

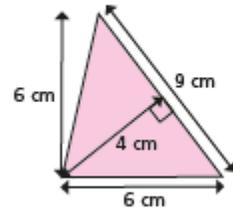


x = cm



y = cm

9 Show two ways you can work out the area of the triangle.



$$\frac{9 \times 4}{2} = 18 \text{ cm}^2$$

$$\frac{6 \times 6}{2} = 18 \text{ cm}^2$$

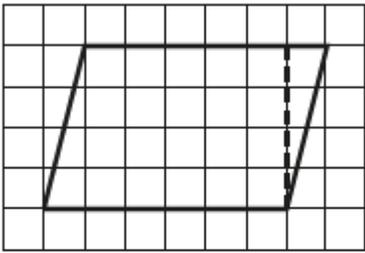
Compare answers with a partner.

3)

Area of a parallelogram



- 1 On a piece of squared paper, copy this parallelogram and cut it out.



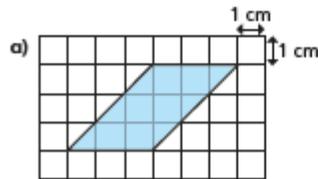
- a) Create a rectangle by cutting off the right-angled triangle and moving it.

- b) Complete the sentences.

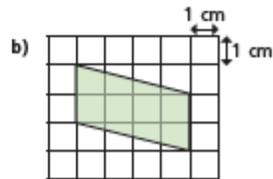
The area of the rectangle is squares.

The area of the parallelogram is squares.

- 2 Calculate the areas of the parallelograms.



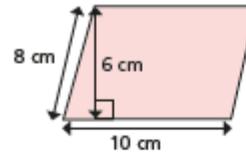
area = cm²



area = cm²



- 3 Huan is finding the area of the parallelogram.



$$10 \times 8 = 80 \text{ cm}^2$$

- a) What mistake has Huan made?

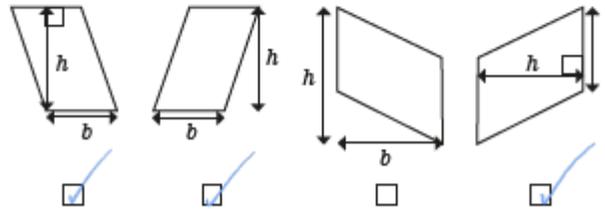
He hasn't used the perpendicular height.

- b) What is the correct answer?

area = cm²

- 4 Esther has labelled the bases and heights for four parallelograms.

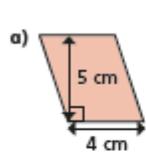
Three are correct; one is incorrect. Tick the shapes that have been correctly labelled.



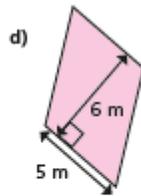
Explain to a partner why one is incorrect.



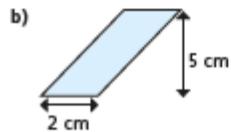
5 Calculate the areas of the parallelograms.



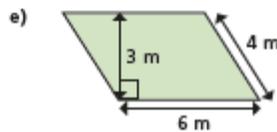
area = cm²



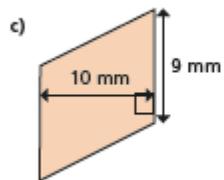
area = m²



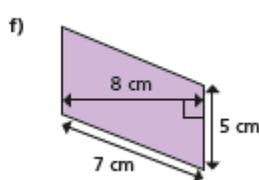
area = cm²



area = m²

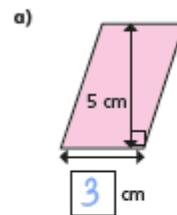


area = mm²

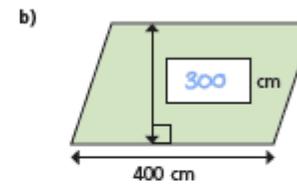


area = cm²

6 Find the missing lengths.

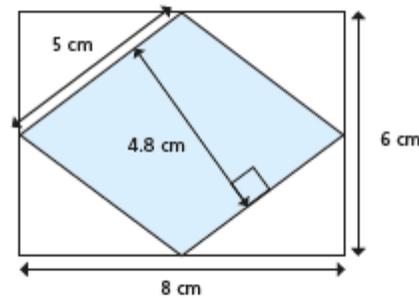


area = 15 cm²



area = 12 m²

7 Here is a rhombus inside a rectangle.



a) Calculate the area of the rhombus.

area = cm²

b) The area of the rhombus is half the area of the rectangle. This means that it is a special triangle.



Explain to a partner why Mo is wrong.

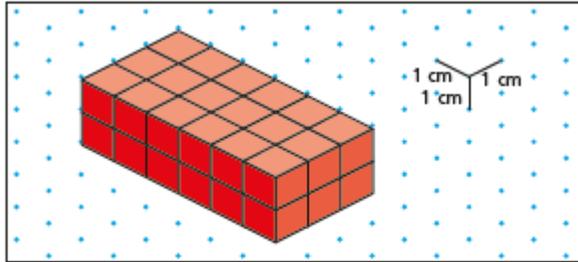


4)

Volume of a cuboid



1 Here is a cuboid made up of cubes.

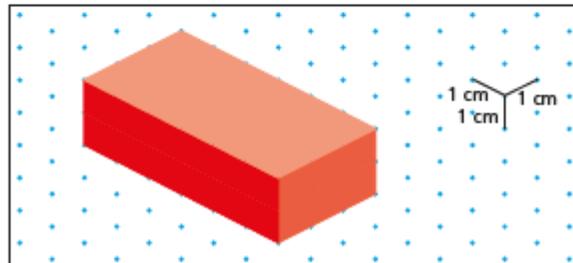


a) What is the volume of the cuboid?

volume = cm³

b) Explain your method for finding the volume.

c) What is the volume of this cuboid?



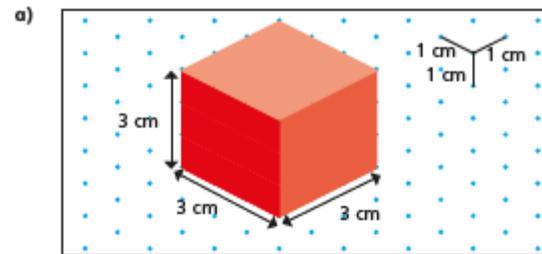
volume = cm³

d) What is the same and what is different about the cuboids?

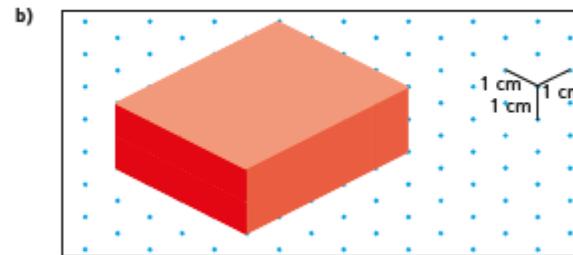


2 Find the volume of the cuboids.

You can make them with cubes if it helps.

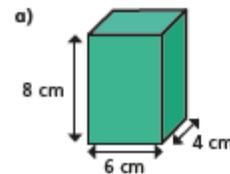


volume = cm³

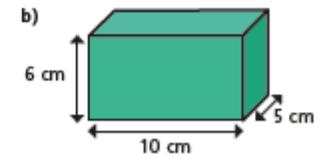


volume = cm³

3 Calculate the volumes of the cuboids.



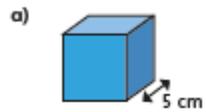
volume = cm³



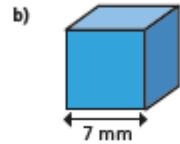
volume = cm³



- 4 Calculate the volumes of the cubes.

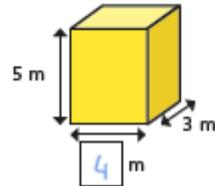


volume = cm^3

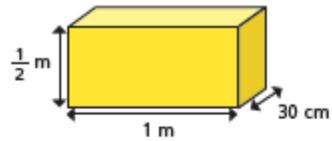


volume = mm^3

- 5 The volume of the cuboid is 60 m^3 .
Find the missing length.

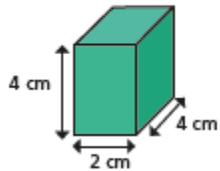


- 6 Calculate the volume of the cuboid.



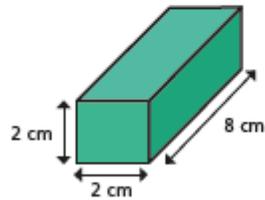
volume = cm^3

- 7 a) Calculate the volumes of the two cuboids.



cm^3

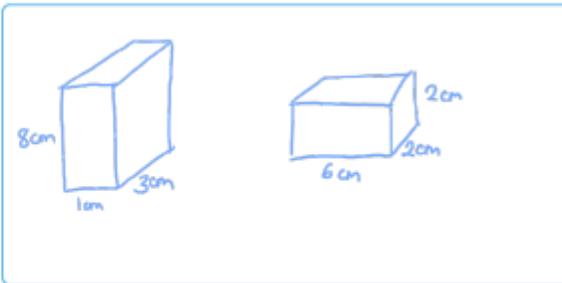
What do you notice?



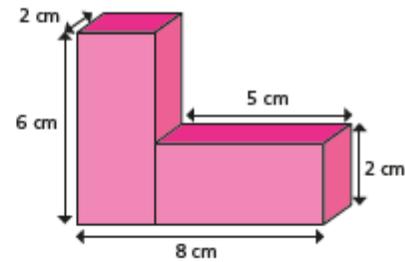
cm^3

- b) Draw two different cuboids that have a volume of 24 cm^3

e.g.



- 8 Calculate the total volume of the shape.



volume = cm^3

Was there another method you could have used?



English Day One

Poetry? by Karl Nova

When I was a kid
poetry seemed boring
complex words on a page
that almost left me snoring
I felt no connection
that language seemed foreign
if it fought for my attention
it was pointless warring
I was introduced to texts
held in high esteem
I did recognise the genius
but they meant nothing to me
all that changed
when I heard an M.C
speak a poetic language that really hit deep
it's like I woke up
from being fast asleep
everything seemed to slow down
I felt my soul leap
I was amazed
how his words transformed him
from being a skinny geek
into someone enormous
He gained energy
as he kept performing
Something awakened in me
that was dormant
it deeply moved me

I dug deeper
struck oil and found gold
now I share all these riches
that I've found
communicating feelings and thoughts
through sound
now that's poetry I'm glad
that I've found
the kind that speaks to me
right here and right now.

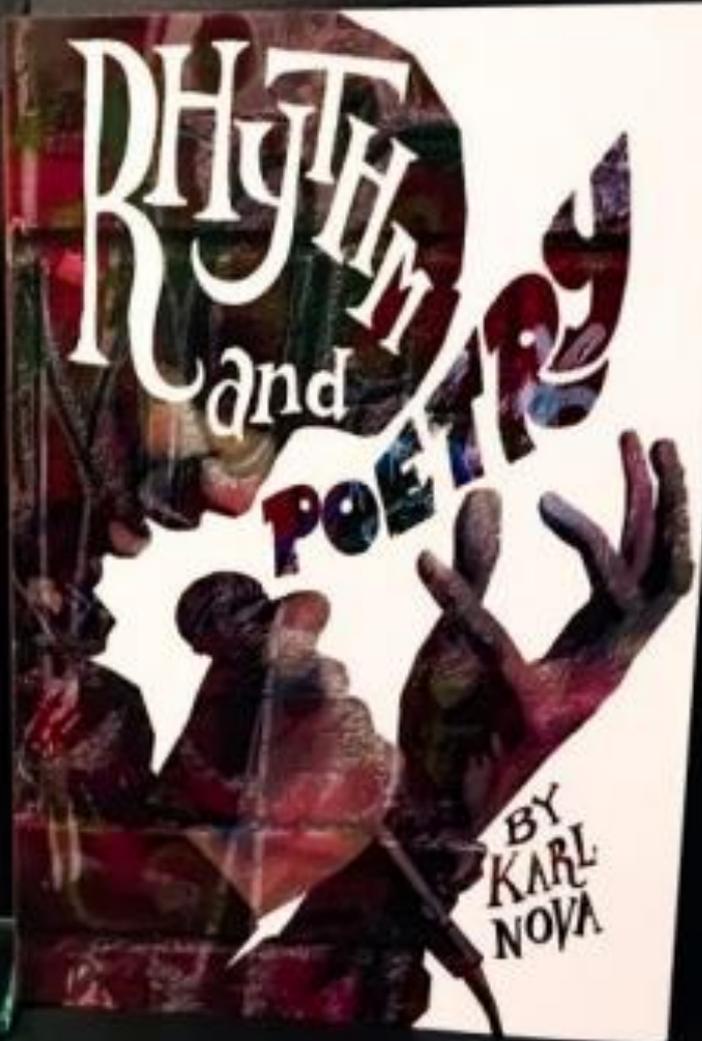
Reading for Writing questions:

1. What was the main influence in Karl Nova's life which made him become a poet?
2. Explain the change of view Karl Nova has about poetry.
3. What does Karl Nova mean by 'I dug deeper struck oil and found gold'?
4. Write down two positives to writing poetry Karl Nova gives in the poem.
5. How does this poem make you feel about poetry?
6. How does Karl Nova create rhythm in his poetry?
7. Find a word which is a synonym for unknown.
8. *I was introduced to texts / held in high esteem / I did recognise the genius / but they meant nothing to me*
What does Karl Nova mean in these four lines?
9. Highlight the rhyming words. Is there a pattern? What effect does this have?
10. In your own words, summarise what this poem is telling the reader about Karl Nova's life.


CLPE

CENTRE FOR LITERACY
IN PRIMARY EDUCATION

Winner
CLIPPA 2018
Karl Nova
Rhythm and Poetry



English Day One - Interview Extract

When did you become a writer of poetry? What helped you develop into the award-winning poet you are today?

I started writing poetry at the suggestion of my younger sister. I was going through a lot in my teens and she noticed that I'd always written a lot of little raps and things and told me I should write more. So I started writing for myself; I wasn't going to show it to anyone. I had stacks of notebooks, but I would hide them under my bed. Then I got into music and started making songs and performing rap, all the time still writing poetry, but doing it for my own recreation. What really took it to the next level was when I started doing workshops with schools and I realised I needed more material to bridge the gap between myself and the students. Working with them reminded me of everything I went through in my teens and as a child, and that's where poems like *Peer Pressure* came from.

How has your background as a hip hop artist contributed to the way you write poetry?

How is it different to writing your music?

This is a really interesting question. Being a hip-hop artist feeds into my work as a poet, I don't really separate them in my mind, but when they come out on paper I know which will be a song and which will be a poem for a book or a recital. When I started writing raps, I wanted to write so well that if someone looked at my lyrics on paper and read them, they knew they were as good as if they were hearing me perform them or if they were hearing them over music. I wanted it to be like standard poetry. I was also inspired by people like Saul Williams, who is an amazing spoken word artist, and by watching Def Jam poetry DVDs; this was a real turning point for me. They would perform the most incredible poetry, which inspired me to want to be as good as these artists were. When I was writing the book, I wanted to be an authentic voice and for that voice to be heard clearly. I started thinking of poets I like, like Maya Angelou, who has a very unique voice in her performance and also in her writing and that's what I aspired to do.

How do you see the impact of your poetry on the children you visit?

I have a philosophy that poetry is written to be spoken. I wanted to make sure that I am a fresh voice that the reader can identify with and that the poetry in the book was as alive on the page as if I was standing in front of them performing it. I've seen the effect my performances have on children when I visit schools. I really want to show that rap is a valid form of literature; when I perform, I can really see their minds opening to the idea that rap is poetry and that poetry is wider than they thought it could be. I'm taking all the literary devices they are learning about, simile, metaphor, onomatopoeia, hyperbole and I'm feeding it back to them through rap. It both validates their own experience and affirms what they are learning in school. Then, when I throw the writing challenge back at them, what they produce is amazing. They understand the themes in my poems and it inspires them to write about what's important to them in their own authentic voice; I've seen them write about mental health, the impact of social media, real and important things they are going through. One day I'd like to be able to capture the poems the children write themselves and put them into a book, they really are that good.

Interview can be found at:

<http://booksforkeeps.co.uk/Issue/231/childrens-books/articles/rhythm-and-poetry-karl-nova-clipa-winner-2018>

English Day Two

Change

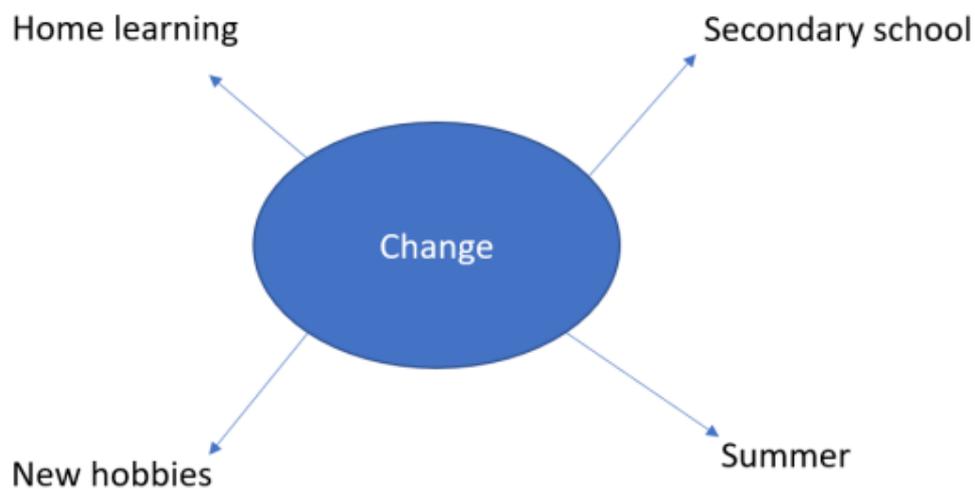
Change is always happening
It's a fact my friend, it's like fads and trends
It's like I used to write poems with pads and pens
Now I type 'em in my phone
I've got stacks of them
Them being notebooks I once wrote in
My head in the clouds daydreaming and floating
Even when sitting still, we're in motion
As the Earth rotates, change isn't slowing
Growth brings change and as we are growing
Life makes me wonder with eyes wide open
The seasons run their annual relay
Spring passes the baton to summer
Whose quick pace and speed runs its lap,
hands over to Autumn
Autumn is cool but not cooler than Winter
I'm talking about change
Even when things seem the same
It has a mysterious way about it that seems strange
Like it seems to happen suddenly
It's hard to explain
Even change changes
I mean, that's its name
Change is always happening
It's a fact my friend, it's like fads and trends
It's like I used to write poems with pads and pens
Now I type 'em in my phone
And I'm rapping them

Change.

Reading for Writing Questions

1. Why is change like fads and trends?
2. Name two changes the poet describes.
3. What line shows the poet is curious about change?
4. Find an example of personification in the poem. Why do you think Karl Nova has used this poetic device?
5. What message do you think Karl Nova is sending?
6. What is your opinion of the poem?

English Day Three



Change is always happening

It's a fact my friend, it's like fads and trends

It's like I used to go to a primary school

Now I'm at secondary

Secondary being such great fun

Fun being my new friends I've made

My head in new books, new subjects, new knowledge

English Day Four and Five

Summer is the best time
so let me start right here
It's my favourite season
I wish it could last all year
The sun feels real near
and it can get so hot
which funnily leads to
some people complaining a lot

After that comes Autumn
some call it the fall
because the leaves change colour
and fall, covering the ground like a shawl
The temperature is cooler
Most times you'll need a light jacket
The holiday is over and back to school
go the students to their classes

Winter sneaks up on you
you start to feel the chill
the festive season approaches
anticipation builds
The Christmas lights come on
The big day arrives
We countdown to the new year
The nights are cold like ice

Spring appears on the horizon
after short dark days and long nights
Jack Frost loses his icy grip
The flowers come out, a beautiful sight
Holiday ends, students back in school again

The excitement of the new year fades
as the months go on it gets warmer
summer returns again with heat waves

English Day Four and Five

REVISING

The 'content' checking

A.R.M.S.

Add

Add interesting or precise sentences and words

Remove

Remove sentences you don't need

Move

Move words or sentences to a more suitable place

Substitute

Change words and sentences for new ones to avoid repetition or use of boring words

EDITING

The SPAG checking

C.U.P.S.

Capitalise

First word in a sentence and proper nouns: names, places, titles, days, months

Usage

Inflection of nouns and verbs

E.g. we was were / one dogs

Punctuation

. ! ? , - ; '

Spelling

Check words you are not sure how to spell, including homophones

Geography

- 1) Which biome is most similar to your chosen biome?
- 2) Which biome is the most different to your chosen biome?
- 3) What could humans do to protect your chosen biome?

Science – Support

Example of imagined creature:



Remember to include:

Name, Kingdom

Features of arms/
legs/ fins

Fur/hair/scales/
horns

Habitat and diet

Shape and size

Placement and
size of eyes/ ears

Distinctive features

Name: Gryfficorn

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

This ancient creature has a similar body-structure to a horse, is 5-8 metres long and 1.5-2.5 metres tall. It has four thin, muscular horse-like legs, with feet similar to a birds, capable of grabbing onto long, thin branches. It has a powerful blue and white tail (3-6 metres in length) which has the ability to protect the beast from predators. It possesses a large extension on the back of its head known as a casque (similar to those of lizards and other reptiles), which is used in the animal's mating rituals, as well as to make it look larger when facing predators. The Gryfficorn has fine, thin and soft fur (this is sometimes used in the international fur-trade and is sold at vast amounts of money). This coat is white when the creature is born, and slowly develops a blue hue, becoming more coarse with age. The Gryfficorn primarily lives in deciduous forests, where it has the ability to climb trees using its powerful bird-like talons. It can also sometimes be found in grasslands, where it is seen running at great speeds. It is a herbivore and its diet consists mainly of grass, roots, and flowers from deciduous forests. Its eyes are placed on either side of its long head, which means that it has good peripheral vision to look for predators. It has long, pointed ears placed near the casque, which are exceptionally good at picking up even very quiet tones. Its most distinctive features include the long tail and fan-shaped casque at the top of its head.

Design Technology – Sculptural birds

Old cardboard or foam board packing materials would work well for this. Think about the size of the bird. If it's too small it will be difficult to cut out and stick all the feathers onto it, however, if it's too big it will take you a long time to cover it all! A bird about the size of hand would be a good size to work towards.

For the legs, you could use pipe cleaners. Lengths of wire, wire wrap around tags or even an uncurled paper clip. Take care if you are using any type of wire as the ends maybe sharp. Ask an adult to bend the ends in if this is the case. If you can't find any wire, you could try using small twigs, used matchsticks (ask an adult to help with these) or other small pieces of wood.

To attach the legs, you can try pushing them into the cardboard or alternately, use Sellotape or glue.



Use as many or as few colours for the feathers as you'd like – look at pictures online or in books to help you colour the feathers accurately. You could try mixing up the materials you use – wax crayons with colouring pencils perhaps, or chalk with felt tips. Try to make your drawing create the texture of feathers through the way in which you colour them.



When you are ready to collage your drawings onto your bird, experiment with sticking them on to create a 3D form and shape.



RE: Read the Miracle of the Feeding of the 5,000 and then answer the questions below.

Jesus Feeds the Five Thousand (John 6:1-15)

6 Some time after this, Jesus crossed to the far shore of the Sea of Galilee (that is, the Sea of Tiberias), ²and a great crowd of people followed him because they saw the signs he had performed by healing the sick. ³Then Jesus went up on a mountainside and sat down with his disciples. ⁴The Jewish Passover Festival was near.

⁵When Jesus looked up and saw a great crowd coming toward him, he said to Philip, "Where shall we buy bread for these people to eat?" ⁶He asked this only to test him, for he already had in mind what he was going to do.

⁷Philip answered him, "It would take more than half a year's wages^[a] to buy enough bread for each one to have a bite!"

⁸Another of his disciples, Andrew, Simon Peter's brother, spoke up, ⁹"Here is a boy with five small barley loaves and two small fish, but how far will they go among so many?"

¹⁰Jesus said, "Have the people sit down." There was plenty of grass in that place, and they sat down (about five thousand men were there). ¹¹Jesus then took the loaves, gave thanks, and distributed to those who were seated as much as they wanted. He did the same with the fish.

¹²When they had all had enough to eat, he said to his disciples, "Gather the pieces that are left over. Let nothing be wasted." ¹³So they gathered them and filled twelve baskets with the pieces of the five barley loaves left over by those who had eaten.

¹⁴After the people saw the sign Jesus performed, they began to say, "Surely this is the Prophet who is to come into the world." ¹⁵Jesus, knowing that they intended to come and make him king by force, withdrew again to a mountain by himself.

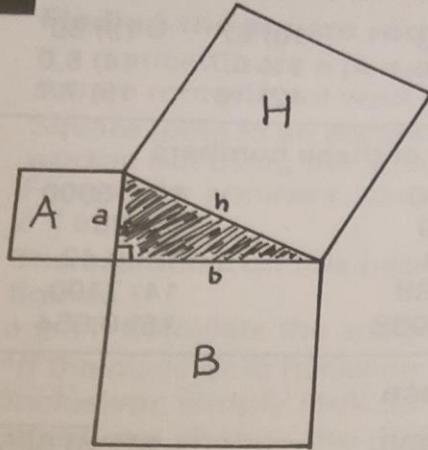
LO: What do the Miracles of Jesus teach us?



The Miracle of the Feeding of the 5,000 is the only miracle that appears in all the four gospels of Matthew, Mark, Luke and John.

- ✚ What does this miracle tell us about Jesus?
- ✚ What did the disciples feel before and after the miracle?
- ✚ How do you think the young boy felt who gave his loaves and fish?
- ✚ What do you think Christians can learn from this miracle about how they should live?

A PYTHAGORAS' THEOREM



In a right-angled triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides.

NOTE. The hypotenuse is the longest side of a right-angled triangle (i.e. the side opposite the right angle)

In the diagram
area H = area A + area B
or $h^2 = a^2 + b^2$

e.g. (1) Find the length of h if $a = 3\text{cm}$, $b = 4\text{cm}$

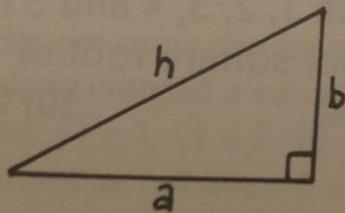
$$\begin{aligned} h^2 &= 3^2 + 4^2 \\ h^2 &= 9 + 16 \\ h^2 &= 25 \\ h &= \sqrt{25} \\ h &= 5 \end{aligned}$$

Length of h is 5cm

e.g. (2) Find the length, correct to 1 decimal place, of the hypotenuse of a triangle whose other two sides are 11cm and 19cm

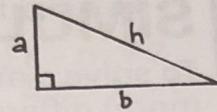
$$\begin{aligned} h^2 &= 11^2 + 19^2 \\ h^2 &= 121 + 361 \\ h^2 &= 482 \\ h &= \sqrt{482} \\ h &= 22.0 \text{ cm (1 d.p.)} \end{aligned}$$

e.g. (3) Find the length b , correct to 1 decimal place, if $h = 23\text{m}$ and $a = 20\text{m}$



$$\begin{aligned} h^2 &= a^2 + b^2 \\ b^2 &= h^2 - a^2 \\ b^2 &= 529 - 400 \\ b^2 &= 129 \\ b &= \sqrt{129} = 11.4\text{m (1 d.p.)} \end{aligned}$$

a Find the length of the hypotenuse (h) in each triangle. If the square root does not work out exactly (questions 11 to 20) give your answer correct to 1 decimal place

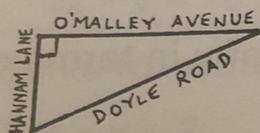


- | | | |
|-----------------------|-----------------------------|------------------------|
| 1) $a = 8, b = 6$ | 8) $a = 80, b = 18$ | 15) $a = 7, b = 11$ |
| 2) $a = 7, b = 24$ | 9) $a = 1, b = \frac{3}{4}$ | 16) $a = 1.5, b = 3.8$ |
| 3) $a = 8, b = 15$ | 10) $a = 63, b = 16$ | 17) $a = 14, b = 6.5$ |
| 4) $a = 16, b = 12$ | 11) $a = 9, b = 6$ | 18) $a = 10, b = 9$ |
| 5) $a = 9, b = 40$ | 12) $a = 5, b = 5$ | 19) $a = 2.7, b = 7.2$ |
| 6) $a = 0.5, b = 1.2$ | 13) $a = 2, b = 4$ | 20) $a = 20, b = 12$ |
| 7) $a = 9, b = 12$ | 14) $a = 8, b = 3$ | |

b Find the length of a in each triangle (like the one at the top of the page). If the square root does not work out exactly (questions 11 to 15) give your answer correct to 1 decimal place.

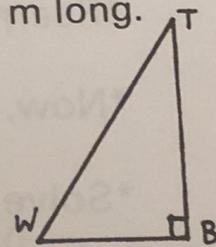
- | | | |
|-----------------------|--|------------------------|
| 1) $h = 26, b = 10$ | 6) $h = 2\frac{1}{2}, b = \frac{5}{6}$ | 11) $h = 10, b = 5$ |
| 2) $h = 61, b = 60$ | 7) $b = 80, h = 100$ | 12) $h = 43, b = 27$ |
| 3) $h = 25, b = 20$ | 8) $h = 221, b = 21$ | 13) $h = 6, b = 4.5$ |
| 4) $h = 7.5, b = 2.1$ | 9) $h = 0.05, b = 0.04$ | 14) $b = 19, h = 22$ |
| 5) $h = 39, b = 36$ | 10) $b = 30, h = 34$ | 15) $h = 3.4, b = 0.8$ |

- c** 1) Tebsworth is 9 miles due north of Petersby; Dalton is 12 miles due east of Petersby. How far is Tebsworth from Dalton?
 2) A ladder is placed with its foot on level ground 4 m from a vertical wall. The top of the ladder is 7.5 m up the wall. Find the length of the ladder.

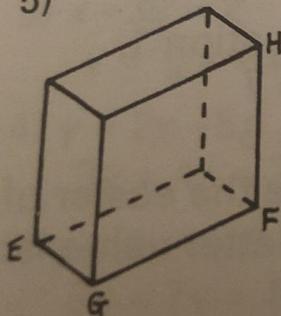


- 3) In the drawing on the left, Doyle Road is 650 m long and O'Malley Avenue is 630 m long. How long is Hannam Lane?

- 4) In the drawing on the right, a vertical flagpole (TB) 10 m high is secured by a wire (TW) 12.5 m long. How far is the bottom of the wire from the foot of the flagpole?



5)



The drawing shows a box in the shape of a cuboid 48 cm long (GF), 36 cm wide (EG), 25 cm high (FH).

- (a) By studying triangle EFG, work out the length EF
 (b) From your answer to part (a) and by studying triangle EFH, work out the length EH

- a. 1) 10
- 2) 25
- 3) 17
- 4) 20
- 5) 41

- 6) 1.3
- 7) 15
- 8) 82
- 9) $1\frac{1}{4}$
- 10) 65

- 11) 10.8
- 12) 7.1
- 13) 4.5
- 14) 8.5
- 15) 13.0

- 16) 4.1
- 17) 15.4
- 18) 13.5
- 19) 7.7
- 20) 23.3

- b. 1) 24
- 2) 11
- 3) 15
- 4) 7.2

- 5) 15
- 6) 2
- 7) 60
- 8) 220

- 9) 0.03
- 10) 16
- 11) 8.7
- 12) 33.5

- 13) 4.0
- 14) 11.1
- 15) 3.3

- c. 1) 15 miles
- 2) 8.5 m

- 3) 160 m
- 4) 7.5 m

- 5) (a) 60 cm
- (b) 65 cm

A SPEED (1)

$$\text{SPEED} = \text{DISTANCE} \div \text{TIME}$$

e.g. A ball, travelling at a steady speed, goes 100 metres in 5 seconds. What is its speed?

$$S = \frac{D}{T}$$

FIRST Write out values of DISTANCE and TIME

THEN Work out speed $S = \frac{100}{5} = 20$

Ball travels at 20 m/s

$$D = 100, T = 5$$

Note Speeds are always written in **distance per time** units, e.g. m/s (metres per second), miles/h (miles per hour), etc.

B Uniform speed and average speed

Things which travel at the same speed all the time have a **UNIFORM SPEED** (or **STEADY SPEED**).

Most things which move in the real world (trains, people, aeroplanes, tennis balls, spiders, etc.) do **NOT** travel at uniform speed, but you can still find their **AVERAGE SPEED** by the same formula.

$$S = \frac{D}{T}$$

e.g. A train went 380 miles in 5 hours. What was its average speed?

$$D = 380, \quad T = 5$$

$$S = \frac{380}{5} = 76$$

Average speed of the train was 76 miles/h

C Hours and minutes

Always express hours and minutes in **HOURS AND FRACTIONS OF AN HOUR** (unless the question asks you to work in minutes). Look at page 30 **A** if you are not sure.

e.g. What is the average speed of a car which travels 132 miles in 2h 45min?

$$D = 132, \quad T = 2\frac{3}{4}$$

$$S = 132 \div 2\frac{3}{4} = \frac{132}{1} \div \frac{11}{4} = 48 \text{ miles/h}$$

a Find the speed (S) from each distance (D) and time (T)

- 1) $D = 35 \text{ m}, T = 5 \text{ s}$
- 2) $D = 630 \text{ miles}, T = 7 \text{ h}$
- 3) $D = 48 \text{ km}, T = 3 \text{ h}$
- 4) $D = 8 \text{ m}, T = 0.2 \text{ s}$
- 5) $D = 64.5 \text{ m}, T = 5 \text{ min}$
- 6) $D = 506 \text{ miles}, T = 22 \text{ h}$
- 7) $D = 65 \text{ km}, T = 2\frac{1}{2} \text{ h}$
- 8) $D = 49 \text{ m}, T = 3\frac{1}{2} \text{ s}$
- 9) $D = 405 \text{ miles}, T = 13\frac{1}{2} \text{ h}$
- 10) $D = 5340 \text{ km}, T = 12 \text{ h}$

b Find the average speed of

- 1) a boy who walks 27 miles in 9 hours
- 2) a boat which travels 84 km in 6 hours
- 3) a cricket ball which travels 138 metres in 6 seconds
- 4) a girl who cycles 72 miles in $4\frac{1}{2}$ hours
- 5) an aeroplane which flies 1008 miles in $5\frac{1}{4}$ hours
- 6) a snail which goes 4 metres in 8 minutes
- 7) a yacht which sails 12 miles in $1\frac{1}{3}$ hours
- 8) a bee which flies 44 metres in 8 seconds
- 9) a locomotive which travels 208 miles in $2\frac{2}{3}$ hours
- 10) an athlete who runs 400 metres in 64 seconds

c Find the average speed of

- 1) an airliner which travels 910 miles in 2 hours 30 minutes
- 2) a car which travels 105 miles in 2 hours 20 minutes
- 3) a boy who walks $13\frac{1}{2}$ miles in 3 h 45 min
- 4) a train which travels 490 miles in 5 h 50 min
- 5) a ship which goes 88 km in 3 h 40 min
- 6) a man who cycles $31\frac{1}{2}$ miles in 2 h 15 min
- 7) a train which goes 400 miles in 4 h 10 min
- 8) a pigeon which flies $137\frac{1}{2}$ km in 2 h 5 min
- 9) a helicopter which sets off at 13 15 and travels 120 miles, ending its journey at 14 55
- 10) a bus which departs from Spalding at 18 45 and arrives at Melton Mowbray, 36 miles away, at 20 21

- a.
- | | | |
|---------------|---------------|---------------|
| 1) 7 m/s | 5) 12.9 m/min | 9) 30 miles/h |
| 2) 90 miles/h | 6) 23 miles/h | 10) 445 km/h |
| 3) 16 km/h | 7) 26 km/h | |
| 4) 40 m/s | 8) 14 m/s | |
-

- b.
- | | | |
|---------------|------------------------|------------------------|
| 1) 3 miles/h | 5) 192 miles/h | 9) 78 miles/h |
| 2) 14 km/h | 6) $\frac{1}{2}$ m/min | 10) $6\frac{1}{4}$ m/s |
| 3) 23 m/s | 7) 9 miles/h | |
| 4) 16 miles/h | 8) $5\frac{1}{2}$ m/s | |
-

- c.
- | | | |
|---------------------------|---------------|-----------------------------|
| 1) 364 miles/h | 5) 24 km/h | 9) 72 miles/h |
| 2) 45 miles/h | 6) 14 miles/h | 10) $22\frac{1}{2}$ miles/h |
| 3) $3\frac{3}{5}$ miles/h | 7) 96 miles/h | |
| 4) 84 miles/h | 8) 66 km/h | |
-

A HOURS, MINUTES, SECONDS

Fractions of an hour

$$1 \text{ minute} = \frac{1}{60} \text{ hour}$$

$$2 \text{ minutes} = \frac{2}{60} = \frac{1}{30} \text{ hour, etc.}$$

To convert minutes into fractions of an hour

e.g. Express 35 minutes as a fraction of 1 hour

*1) Divide by 60 $\frac{35}{60}$

*2) Cancel to lowest terms $\frac{35}{60} = \frac{7}{12} \text{ hour}$

e.g. (2) Express 4 hours 40 minutes as a number of hours

$$4\frac{40}{60} = 4\frac{40 \div 20}{60 \div 20} = 4\frac{2}{3} \text{ hours}$$

B To convert fractions of an hour into minutes

e.g. Convert $\frac{5}{6}$ hour into minutes

*1) Multiply by 60 $\frac{5}{6} \times \frac{60}{1}$

*2) Cancel as far as you can $\frac{5}{\cancel{6}^1} \times \frac{\cancel{60}^{10}}{1} = 50 \text{ minutes}$

e.g. (2) What is $2\frac{4}{5}$ hours in hours and minutes?

$$2\frac{4}{5} \text{ hours} = 2 \text{ hours} + \frac{4}{5} \times \frac{60}{1} \text{ minutes}$$

$$= 2 \text{ hours } 48 \text{ minutes}$$

C

$$60 \text{ minutes} = 1 \text{ hour}$$

$$60 \text{ min} = 1 \text{ h}$$

$$60 \text{ seconds} = 1 \text{ minute}$$

$$60 \text{ s} = 1 \text{ min}$$

$$3600 \text{ seconds} = 1 \text{ hour}$$

$$3600 \text{ s} = 1 \text{ h}$$

Conversion

hours to minutes	$\times 60$
minutes to hours	$\div 60$
minutes to seconds	$\times 60$
seconds to minutes	$\div 60$
hours to seconds	$\times 3600$
seconds to hours	$\div 3600$

e.g. Express 11 minutes

- a** Express each of these as a fraction of 1 hour in its lowest terms
- | | | |
|---------------|----------------|----------------|
| 1) 12 minutes | 6) 25 minutes | 11) 13 minutes |
| 2) 55 minutes | 7) 3 minutes | 12) 40 minutes |
| 3) 30 minutes | 8) 24 minutes | 13) 15 minutes |
| 4) 8 minutes | 9) 45 minutes | 14) 10 minutes |
| 5) 20 minutes | 10) 33 minutes | 15) 54 minutes |

- b** Express each of these in **hours and fractions of an hour**
- | | | |
|--------------|--------------|----------------|
| 1) 3h 50min | 6) 10h 35min | 11) 5h 30min |
| 2) 1h 16min | 7) 1h 20min | 12) 8h 6min |
| 3) 5h 42 min | 8) 7h 48min | 13) 9h 44min |
| 4) 6h 4 min | 9) 2h 5min | 14) 12h 40 min |
| 5) 2h 45 min | 10) 3h 40min | 15) 4h 32 min |

- c** Express each of these in minutes
- | | | |
|------------------------|-------------------------|--------------------------|
| 1) $\frac{1}{4}$ hour | 6) $\frac{4}{60}$ hour | 11) $\frac{9}{10}$ hour |
| 2) $\frac{7}{12}$ hour | 7) $\frac{2}{3}$ hour | 12) $\frac{1}{2}$ hour |
| 3) $\frac{4}{5}$ hour | 8) $\frac{1}{6}$ hour | 13) $\frac{17}{60}$ hour |
| 4) $\frac{3}{10}$ hour | 9) $\frac{11}{12}$ hour | 14) $\frac{7}{60}$ hour |
| 5) $\frac{1}{2}$ hour | 10) $\frac{1}{3}$ hour | 15) $\frac{13}{15}$ hour |

- d** Express each of these in **hours and minutes**
 e.g. $5\frac{1}{4}$ hours = 5 hours 15 minutes
- | | | |
|---------------------------|---------------------------|---------------------------|
| 1) $3\frac{3}{4}$ hours | 6) $5\frac{5}{6}$ hours | 11) $10\frac{2}{3}$ hours |
| 2) $2\frac{1}{3}$ hours | 7) $2\frac{7}{10}$ hours | 12) $8\frac{1}{2}$ hours |
| 3) $6\frac{7}{12}$ hours | 8) $7\frac{3}{5}$ hours | 13) $3\frac{1}{6}$ hours |
| 4) $4\frac{1}{4}$ hours | 9) $4\frac{11}{20}$ hours | 14) $5\frac{4}{15}$ hours |
| 5) $1\frac{31}{60}$ hours | 10) $1\frac{7}{15}$ hours | 15) $1\frac{4}{5}$ hours |

- e**
- Express as a number of minutes
 (a) 4 hours (b) 9 hours (c) $2\frac{1}{4}$ hours (d) $3\frac{3}{10}$ hours
 (e) $1\frac{3}{5}$ hours
 - Express as a number of seconds
 (a) 7 minutes (b) 3 minutes (c) $1\frac{1}{2}$ minutes
 (d) $5\frac{1}{3}$ minutes (e) $\frac{3}{4}$ hour
 - Express as a number of minutes
 (a) 120 seconds (b) 200 seconds (c) $4\frac{5}{6}$ hours
 (d) 65 seconds (e) 395 seconds
 - Express as a number of hours
 (a) 480 minutes (b) 210 minutes (c) 340 minutes
 (d) 4200 seconds (e) 175 minutes

Page 31

- | | | | |
|-----------------------|---------------------|-----------------------|----------------------|
| a. 1) $\frac{1}{5} h$ | 5) $\frac{1}{3} h$ | 9) $\frac{3}{4} h$ | 13) $\frac{1}{4} h$ |
| 2) $1\frac{1}{2} h$ | 6) $5\frac{1}{2} h$ | 10) $1\frac{1}{20} h$ | 14) $\frac{1}{6} h$ |
| 3) $\frac{1}{2} h$ | 7) $\frac{1}{20} h$ | 11) $1\frac{3}{60} h$ | 15) $\frac{9}{10} h$ |
| 4) $\frac{2}{5} h$ | 8) $\frac{2}{5} h$ | 12) $\frac{2}{3} h$ | |

- | | | | |
|------------------------|-----------------------|-----------------------|------------------------|
| b. 1) $3\frac{5}{6} h$ | 5) $2\frac{3}{4} h$ | 9) $2\frac{1}{2} h$ | 13) $9\frac{11}{15} h$ |
| 2) $1\frac{4}{5} h$ | 6) $10\frac{7}{12} h$ | 10) $3\frac{2}{3} h$ | 14) $12\frac{2}{3} h$ |
| 3) $5\frac{7}{10} h$ | 7) $1\frac{1}{3} h$ | 11) $5\frac{1}{2} h$ | 15) $4\frac{8}{15} h$ |
| 4) $6\frac{1}{15} h$ | 8) $7\frac{4}{5} h$ | 12) $8\frac{1}{10} h$ | |

- | | | | |
|--------------|-----------|------------|------------|
| c. 1) 15 min | 5) 30 min | 9) 55 min | 13) 51 min |
| 2) 35 min | 6) 41 min | 10) 20 min | 14) 7 min |
| 3) 48 min | 7) 40 min | 11) 54 min | 15) 52 min |
| 4) 18 min | 8) 10 min | 12) 5 min | |

- | | | |
|----------------|--------------|---------------|
| d. 1) 3h 45min | 6) 5h 50min | 11) 10h 40min |
| 2) 2h 20min | 7) 2h 42min | 12) 8h 30min |
| 3) 6h 35min | 8) 7h 36min | 13) 3h 10min |
| 4) 4h 15min | 9) 4h 33min | 14) 5h 16min |
| 5) 1h 31min | 10) 1h 28min | 15) 1h 48min |

- | | | |
|------------------------|-------------------------|-------------------------|
| e. 1) (a) 240 min | (c) 135 min | (e) 96 min |
| (b) 540 min | (d) 198 min | |
| 2) (a) 420 s | (c) 90 s | (e) 2700 s |
| (b) 180 s | (d) 320 s | |
| 3) (a) 2 min | (c) 290 min | (e) $6\frac{7}{12} min$ |
| (b) $3\frac{1}{3} min$ | (d) $1\frac{1}{12} min$ | |
| 4) (a) 8 h | (c) $5\frac{2}{3} h$ | (e) $2\frac{11}{12} h$ |
| (b) $3\frac{1}{2} h$ | (d) $1\frac{1}{6} h$ | |

A OTHER BASES (1)

Normal counting is done in **BASE 10** (also called DENARY or DECIMAL), i.e.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, etc.

In **BASE 10**, TEN different figures (or digits) are used, i.e. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9

Counting in other bases can be just as easy e.g. In **BASE 6**, six different figures are used 0, 1, 2, 3, 4 and 5

In **BASE 6**, no figure larger than 5 may be used, so counting in base 6 goes

1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 20, etc

e.g. In **BASE 2** (binary), two different figures are used 0, 1

In base 2 (binary) no figure larger than 1 may be used, so counting in base 2 goes

1, 10, 11, 100, 101, 110, 111, 1000, 1001, 1010, 1011, etc.

Base 2 is usually called **BINARY**

Base 3 is sometimes called **TERNARY**

Base 8 is sometimes called **OCTAL**

NOTE Bases can be larger than 10, e.g. base 16 (hexadecimal, but usually called just **HEX**), which is used in computing.

For bases larger than 10, new 'figures' must be invented,

e.g. counting in base 16 goes 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, etc.

B Columns in other bases

The columns in ordinary counting (base 10) are

10000 1000 100 10 1

Each column is multiplied by 10 to get the next bigger column.

In other bases each column is multiplied **BY THE BASE** to get the next column, e.g. in base 4

4^4 4^3 4^2 4^1 4^0

(64×4) (16×4) (4×4) (1×4)

256 64 16 4 1 etc.

IMPORTANT. The right-hand column is always the **UNITS COLUMN** (the **ONES** column) in any base.

e.g. Write down the first fifteen numbers in base 5, starting with 1

a Answer 1, 2, 3, 4, 10, 11, 12, 13, 14, 20, 21, 22, 23, 24, 30

- Write down, starting with 1,
- 1) the first ten numbers in base 3
 - 2) the first twenty numbers in base 8
 - 3) the first ten numbers in base 4
 - 4) the first fifteen numbers in base 7
 - 5) the first twenty numbers in base 9

e.g. Find the next five consecutive numbers above 14 in base 7

b Answer 15, 16, 20, 21, 22

- 1) Find the next four consecutive numbers above 26 in base 8
- 2) Find the next five consecutive numbers above 1212 in base 3
- 3) Find the next three consecutive numbers below 61 in base 7
- 4) Find the next four consecutive numbers above 42 in base 5
- 5) Find the next four consecutive numbers below 122 in base 6

c e.g. Find the values of 7^3 , 7^2 , 7^1 , 7^0 , and set them out as columns in base 7

$$7^3 = 7 \times 7 \times 7 = 343; \quad 7^2 = 7 \times 7 = 49; \quad 7^1 = 7; \quad 7^0 = 1$$

so answer is 343 49 7 1

REMEMBER. Anything to the power 0 = 1

e.g. $4^0 = 1$, $8^0 = 1$, etc.

In each of these, find the values of the numbers and set out the answers in columns

- 1) $8^3, 8^2, 8^1, 8^0$
- 2) $3^6, 3^5, 3^4, 3^3, 3^2, 3^1, 3^0$
- 3) $2^7, 2^6, 2^5, 2^4, 2^3, 2^2, 2^1, 2^0$
- 4) $10^5, 10^4, 10^3, 10^2, 10^1, 10^0$
- 5) $12^2, 12^1, 12^0$

e.g. Work out the first five columns in base 3

d Answer 81 27 9 3 1

Work out the first five columns in

- 1) base 6
- 2) base 4
- 3) base 9
- 4) base 7
- 5) base 5

4) 198

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a. 1) 1, 2, 10, 11, 12, 20, 21, 22, 100, 101

2) 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24

3) 1, 2, 3, 10, 11, 12, 13, 20, 21, 22

4) 1, 2, 3, 4, 5, 6, 10, 11, 12, 13, 14, 15, 16, 20, 21

5) 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22

b. 1) 27, 30, 31, 32

2) 1220, 1221, 1222, 2000, 2001

3) 60, 56, 55

4) 43, 44, 100, 101

5) 121, 120, 115, 114

c. 1) 512, 64, 8, 1

2) 729, 243, 81, 27, 9, 3, 1

3) 128, 64, 32, 16, 8, 4, 2, 1

4) 100000, 10000, 1000, 100, 10, 1

5) 144, 12, 1

BOOK 4. PAGES

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d. 1) 1296, 216, 36, 6, 1

2) 256, 64, 16, 4, 1

3) 6561, 729, 81, 9, 1

4) 2401, 343, 49, 7, 1

5) 625, 125, 25, 5, 1

Paper 2

Find the answers to these calculations.

1 $1.78 + 0.48 =$ _____

3 $2.43 - 2.06 =$ _____

2 $0.96 + 1.05 =$ _____

4 $1.79 - 0.98 =$ _____

Write in the fraction or percentage equivalents.

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

7 $33\frac{1}{3}\% =$ _____

6 $\frac{175}{1000} =$ _____ %

8 $5\% =$ _____

Fill in the missing numbers.

9 $1^2 + \underline{\quad} = 2^2$

11 $5^2 + \underline{\quad} = 6^2$

10 $3^2 + \underline{\quad} = 4^2$

12 $9^2 + \underline{\quad} = 10^2$

Find the given fraction of each quantity.

13 $\frac{1}{5}$ of 3 m = _____

14 $\frac{2}{3}$ of 36 kg = _____

15 $\frac{1}{6}$ of £138 = _____

16 $\frac{3}{8}$ of 448 g = _____

_____ cm
_____ kg
£ _____
_____ g

17 Write $\frac{5}{8}$ as a decimal. _____

18 Write 0.32 as a fraction in its **lowest terms**. _____

19 A train travels 45 km in an hour. How many metres is that in 1 minute? _____

20 What is 13 hours 10 minutes in seconds? _____ seconds

21 In a group of 30 people, there are 18 who are 15 years of age, 9 are 16, and 3 are 17. What is the **mean** age of the group? _____

22 What is the **mean** of this group of numbers? _____

141 193 169 155 171 155

Convert these mileages to kilometres.

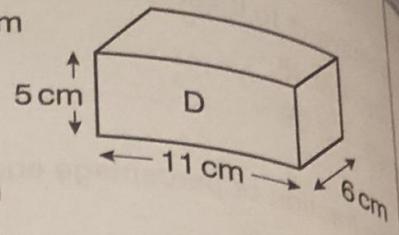
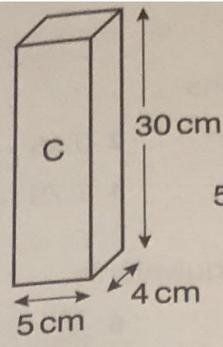
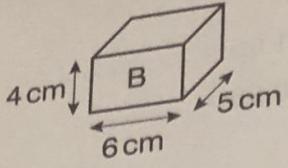
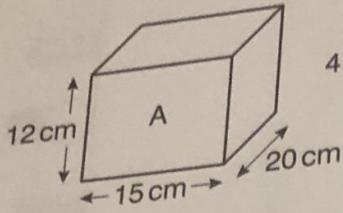
23 135 miles = _____

24 38 miles = _____

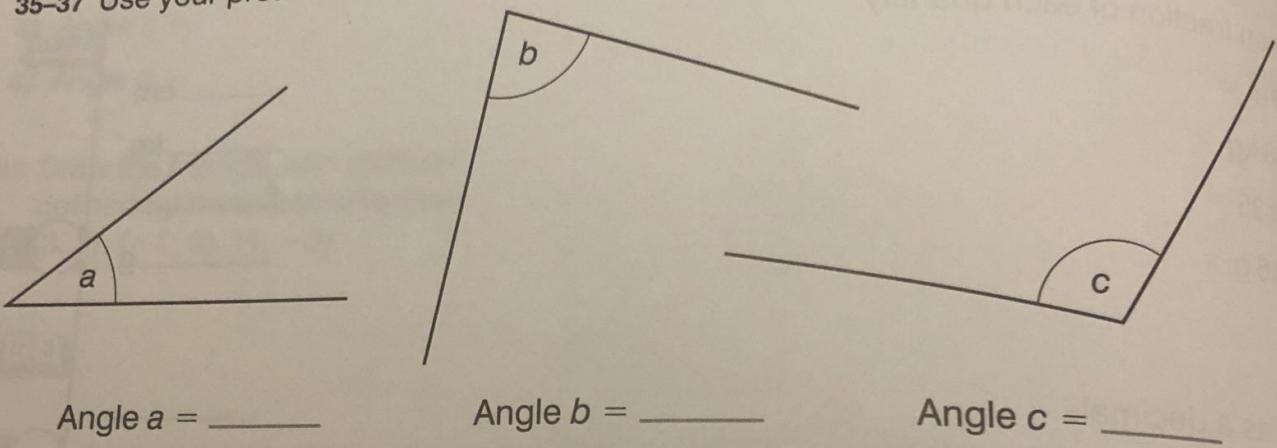
25 230 miles = _____

26 12 miles = _____

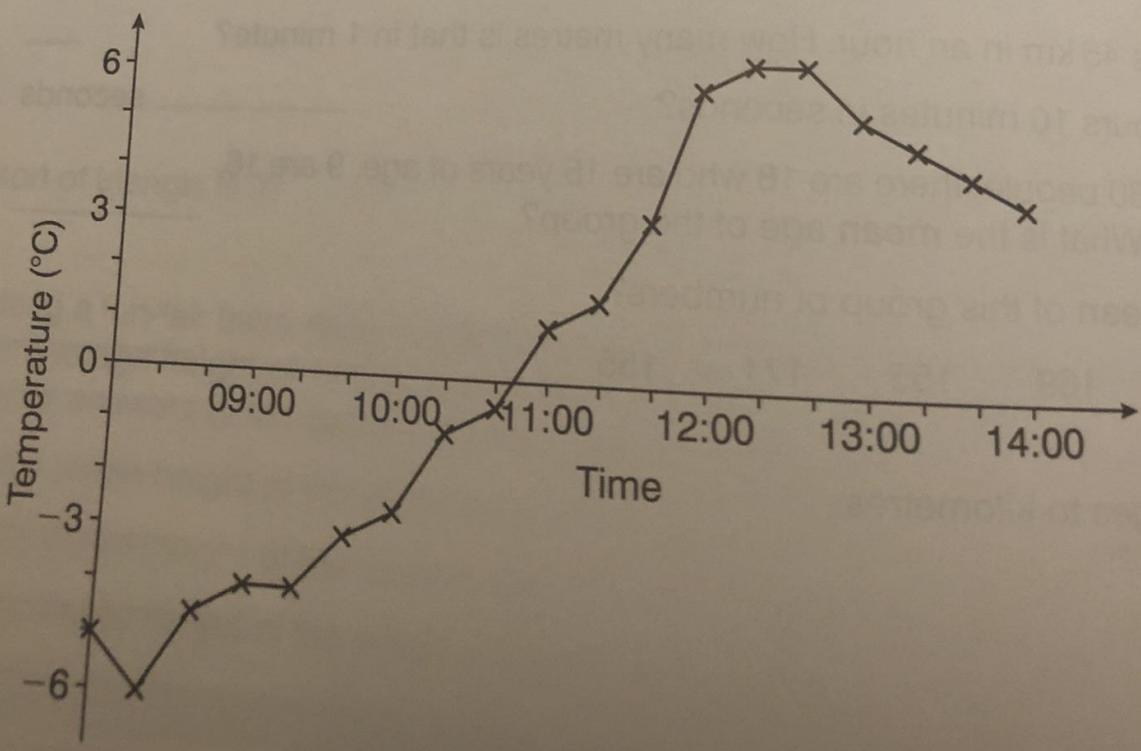
Calculate the volume and surface area of each



- 27-28 The volume of A is _____ cm^3 and its surface area is _____ cm^2 .
 29-30 The volume of B is _____ cm^3 and its surface area is _____ cm^2 .
 31-32 The volume of C is _____ cm^3 and its surface area is _____ cm^2 .
 33-34 The volume of D is _____ cm^3 and its surface area is _____ cm^2 .
 35-37 Use your protractor to measure these angles to the nearest degree.



This is a temperature-time graph.



38 What was the temperature at 10:20?

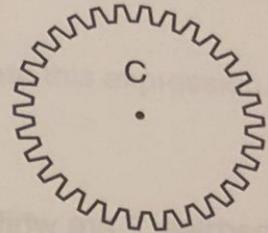
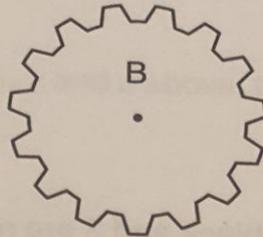
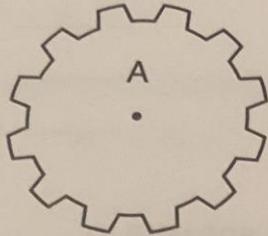
39 What was the time interval between each recording?

40 How many degrees cooler was it at 08:40 than at 11:40?

41 What is the difference between the highest and lowest temperatures?

____°C
____°C
____°C

Use the numbers of teeth on these gear wheels to answer the questions below. Give answers as fractions in the **lowest terms**.



42-43 If gear A makes 5 whole turns then gear B makes ____ turns and gear C makes ____ turns.

44-45 If gear B makes 1 whole turn then gear A makes ____ turns and gear C makes ____ turn.

46-50 Complete the table of values for $y = 4 - x^2$.

x	-4	-3	-2	-1	0
y					

Now go to the Progress Chart to record your score!

Paper 2

3
3
3
3
40

g

- 1 2.26
- 2 2.01
- 3 0.37
- 4 0.81
- 5 40
- 6 17.5
- 7 $\frac{1}{3}$
- 8 $\frac{1}{20}$
- 9 3
- 10 7
- 11 11
- 12 19
- 13 60
- 14 24
- 15 23
- 16 168
- 17 0.625
- 18 $\frac{8}{25}$
- 19 750 m
- 20 47 400
- 21 $15\frac{1}{2}$ or 15.5
- 22 164
- 23 216 km
- 24 60.8 km
- 25 368 km
- 26 19.2 km
- 27 3600
- 28 1440
- 29 120
- 30 148
- 31 600
- 32 580
- 33 330
- 34 302
- 35 38°
- 36 83°
- 37 112°
- 38 -1
- 39 20 minutes
- 40 $7\frac{1}{2}$ or 7.5
- 41 12
- 42 4
- 43 2
- 44 $1\frac{1}{4}$
- 45 $\frac{1}{2}$

46-50

x	-4	-3	-2	-1	0
y	-12	-5	0	3	4