

Everest

A dangerous place

Everest, in the high Himalayas, stands tall and firm, a giant unmoved by wind or snow, the air too thin for plant or animal life. Climbing Mount Everest is hard and dangerous work. Even with the aid of modern technology, the fittest of climbers may experience the effects of hypoxia. Then their dreams of reaching the summit of the highest mountain in the world are over.

Cerebral hypoxia is caused by lack of oxygen to the brain. People with cerebral hypoxia show signs of impaired judgement; they become confused and as their condition worsens they do not know where they are or what they are doing. People who recover from this type of hypoxia remember going into a trance-like state in which events and objects were magnified out of proportion. But many do not recover. In 1996 eight people died in a single day on Everest.

Research is underway to find out more about the effects of altitude on the human body. Scientists are interested to understand why people's abilities in mountain conditions vary so much. Some climbers on Everest can trudge through heavy snow and climb cliffs at their maximum capacity for hours without even the assistance of oxygen. Others struggle to breathe in the thin air; some collapse and are unable to carry on. These scientists know that the larger the lungs, the more oxygen



the lungs can absorb. This oxygen is in turn picked up by the blood and delivered to the muscle tissues. Perhaps this is an important clue to people's varying abilities.

Adjusting your body to the thin air, allowing it to get used to lower levels of oxygen, is vital if a climber wants to tackle Mount Everest. On early expeditions to Mount Everest, climbers trekked for weeks to get to Base Camp, which gave people's bodies time to adjust. Today, climbers are flown into Lukla, a Sherpa village from where it takes just ten days to reach Base Camp. This shortens the amount of time a climber has to acclimatise to the thin air.

The climb

Once at Everest Base Camp, there follows a period of further acclimatisation. Base Camp is situated on a glacier that constantly shifts and moves beneath your feet. It is an inhospitable place filled with the brightly coloured tents of climbers who are anxious to make it to the top.

The climb to Mount Everest's summit begins with a traverse of the Khumbu Icefall. This is a steep glacier filled with deep crevasses and huge ice blocks. It should be climbed in the early morning when the sun has not yet warmed the snow and ice. A mass of fixed ropes and ladders cross the crevasses to enable climbers to get across the glacier; without them, no climber would make it through. It is a dangerous start to the climb, for the icefall is unpredictable. The giant blocks of ice which dominate the area can weigh up to thirty tons each. These blocks can shift without warning; and crevasses can cave in, taking climbers with them. Later in the day the icefall becomes even more unpredictable and unstable; to cross it then would be foolhardy in the extreme.

Climbing higher, one faces further risks, such as acute mountain sickness. The early signs of this are a headache followed by dizziness, trouble sleeping and nausea. A person may lose their appetite and be reluctant to drink. As the sickness develops, the nausea continues, and sufferers begin to

have problems with their balance and coordination. Should these symptoms appear, it is important that the climber seeks immediate medical advice and goes back down the mountain for a while to a place where lower altitude will allow the body a chance to recover and adjust.

Climbers say that in acute mountain sickness, the shortage of breath and lack of sleep are the two most troublesome things. The sickness can attack very quickly. One minute you feel strong and well and the next you are stricken with a severe headache.

It takes time for the body to adapt, but eventually climbers make it up to the high camps and then prepare for their attempt on the summit. At 26,000 feet they face the Death Zone; this is aptly named because here the body uses up its store of oxygen faster than it can be replenished. Sleeping becomes a problem. The muscles begin to waste away and a climber's weight decreases. The body becomes weaker and weaker, so much so that their time above 26,000 feet is severely limited. An extended stay in the Death Zone without extra oxygen will end in death.

Those climbers who reach the summit of Mount Everest achieve a great dream, but not without a price. They will have pushed their bodies to the utmost and suffered discomforts most of us can not imagine. They have, however, reached the Top of the World and that is an experience most of us will only ever read about.



Questions

Answer the following questions with a full sentence:

1. In which mountain range is Mount Everest?
2. What causes hypoxia?
3. What symptoms does a person with cerebral hypoxia show?
4. Why might climbers with large lungs be at an advantage?
5. Why is the Khumbu Icefall so hazardous?
6. What helps climbers to cross the crevasses in the icefall?
7. Where is the Death Zone located?
8. Why is the Death Zone given that name?

Word work

1. Give the meaning of the following words:

crevasse
traverse
glacier
maximum
decrease

2. If your judgement is 'impaired', what does that mean?
3. If a place is considered *inhospitable*, what does that mean?
4. What does it mean to be 'acclimatised'?

Extension work

1. From what you have read, do you think climbing Mount Everest sounds appealing? Give reasons for your answer.
 2. From what you have read, do you think it would have been better to have joined one of the old expeditions or a modern one? Give reasons for your response.
 3. Given that there are significant dangers to climbing at high altitude, what do you think attracts people to high mountains?
- Why would a shortage of breath and a lack of sleep be a problem on Mount Everest?
- We are told that climbers who reach the summit achieve a 'great dream, but not without a price,' explain what you think is meant by this expression and what 'the price' could be?
- Which two phrases best describe how dangerous Everest is?
- How do you think the research that has been gathered will benefit climbers in the future?

EVEREST - Comprehension

1. Mount Everest is in the _____
mountain range.

2. Hypoxia is caused by

3. A person with cerebral hypoxia shows the following
symptoms:

- _____
- _____
- _____
- _____
- _____

4. Climbers with large lungs might be at an advantage
because _____

5. Khumbu Icefall is so hazardous because _____

6. Climbers are helped to cross the crevasses in the icefall by _____

7. The Death Zone is located _____

8. The Death Zone is given that name because _____

Text Type:	Newspaper Report RH VERSION
Purpose:	To inform and to entertain
Text Features:	Written in the past tense: (<i>said, was, told, saw etc</i>) Written in the third person: (<i>he, she, they, his, her</i>)
Openers:	To signal time and sequence: <i>Yesterday..., It started..., At first..., Soon..., Then..., Next..., Later..., Eventually..., At last..., Finally...,</i> For dramatic effect: <i>Fortunately..., Unfortunately..., Unbelievably..., Remarkably, Luckily..., Happily..., Sadly..., Tragically..., Suddenly..., Despite..., Eventually...,</i>
Connectives:	Cause and effect: <i>so, so that, because, therefore, since, consequently</i> Contrast and comparison: <i>but, however, although, despite, nevertheless</i>
Vocabulary:	<i>article, reporter, photographer, eye-witness, by-stander, on-looker, innocent, guilty, victim, brave, hero, commented, incident, accident, injured, dangerous, tragedy, spectacular, escaped, police, ambulance, fire brigade</i>
	Detailed descriptions.
	Photograph. Caption underneath photograph.
	Varied sentence structure.

WHO?	WHAT?	WHEN?	WHERE?	WHY?
HOW?				
Headline: The main idea - short, catchy, not necessarily a sentence, might include word play, puns/double meaning/homonyms, alliteration, rhyme.				

1. Lead paragraph/The Orientation: The main facts, the report in brief. Must include: who, what, where, when? Sets the scene and summarises the main points of the article - may only be one sentence.

2. Main paragraph: More details of who, where, when, why, how: (names and ages of those involved, actual times, place names etc).

3. Main paragraph: More details including reactions. Comments and quotes by witnesses or the people involved about the events.

4. Reorientation: Summarise what has happened. Consider what might happen in the future. Aim to link the end back to the start.

Manor News

BLIZZARD CAUSES CHAOS!

JANUARY 19th 2014

Why you should be prepared!

Blizzard causes...Chaos?

A vast, thick, white blanket has coated the majority of the West of Britain last night. Many people have awoken to complete chaos as blizzard conditions hit the UK overnight. Even though the Met office had forecast these conditions, nothing could have prepared the nation for the sight which met them this morning.

All over the West Country, Police have been dealing with a flurry of accidents caused by the snow. Surprisingly, there were many people who decided to take the risk of driving in those perilous conditions. As a result, one family, in Stroud, found two vehicles had veered off the road and into their garden." We heard this almighty crash and my husband was outside at that point checking for damage. He had to help the driver out of the back passenger door," explained Mrs Smith. Therefore, the Highways Agency have warned drivers to avoid unnecessary travel, check forecasts and allow extra time for journeys. Steve Crosthwaite, Head of the Agency's National Traffic Operations Centre, suggested: "During periods of severe weather, we suggest people consider whether their journey is essential. They may want to delay travel until conditions have improved."

In addition, many people were forced to abandon their vehicles and on the A595 this morning, the rooftops of the cars were just about visible under a mountain of snow. Stranded in the late hours last night, 74 people were rescued by helicopter and some had been stuck for up to 8 hours. Paul Calland from the Cumbrian Bay Search and Rescue team said that he and his team had to dig down to some of the cars to get people out.



He stated that the snow was so deep in places that the snow mobiles at certain points were actually higher than the cars which they were digging out!

Vehicles aren't the only sufferers of this fluffy, white, picture postcard delight: many houses are now without power; schools have been forced to close due to lack of fuel (and staff); major retail chains have run out of supplies; and animals have become encased in the drifts.

However, apparently some people have welcomed the ensuing chaos and are making the most of it. Blanche Neige - a student at Bristol Primary School -, enthused, "We don't have to go to school for a while. It's fantastic, look at this huge wintry playground. I get to play with all of me mates, which mean that we are receiving lots of exercise." She was greatly excited and added, "It's well fun!" So it seems that every cloud has a silver lining. At least for some!

Continuing winds and further snow expected throughout the next few days means that the chaos isn't going to end soon. Consequently, make sure that you are prepared and only venture out if it is really necessary!

Report by B.Lizzard

Direct Speech

Learning Objective: To Become Familiar With the Conventions of Punctuating Direct Speech.

Part A

Underline the spoken words.

1. "I'm sure we will have rain today," said Robert.
2. "The weather forecast said snow," replied Susan.
3. "Rain or snow, I'm going to stay indoors!" exclaimed Robert.

Part B

Put speech marks around the spoken words.

1. What is your dog called? asked Alison.
2. He's called Dex, replied Susan.
3. We used to have a dog called Dex! cried Alison.

Part C

Put speech marks around the spoken words in each sentence. You will also have to add one of the following:

a comma a question mark an exclamation mark

1. We are going down to the river today said Mr Toms.
2. What are we going to do down there asked Kim.
3. We are going to draw the plants which grow along the bank explained Mr Toms.
4. Hope I don't fall in cried Sam.
5. Do you know where I put my book asked Claire.
6. Someone has kicked a ball through my window shouted Mrs Hart.
7. We will do silent reading after lunch said Mr Jones.
8. Can you help me enquired Greg.

9. What do you want snapped the old lady.
10. I can't find my homework moaned Sally.
11. I enjoyed going swimming said Tim.
12. Don't be late again warned the teacher.

Part D

Sometimes the spoken words are split, e.g. "When I have finished this book," said Dominic, "it will be time for bed." We need two commas and two lots of speech marks.

Punctuate the following:

1. If it rains tonight said Mark the ground will be too wet to play football.
2. You should leave ten minutes early suggested Dad to make sure you don't miss the bus.
3. I have to go into town said Dad and change my library books.

Part E

Put speech marks around the spoken words in each sentence. Change letters that should be capitals and add any other missing punctuation.

1. quick said sam hide the map
2. help me clean up this mess josh said
3. hey you the teacher shouted where are you going
4. can I tidy the art corner the boy asked the teacher
5. my sock is smellier than yours joe said to sam no it isn't sam replied

Change the style

Rewrite these sentences changing reported speech to direct speech and direct speech to reported speech.

1. Mum said she was making chips for tea so I told her they were my favourites.
2. I asked, "Can we go swimming?"
"The pool is closed today," dad replied.
3. The cyclist warned everyone to get out of the way because his brakes were not working.
4. The teacher said, "Sit down and answer your names on the register," Then he added, "Where is the register?"
5. I asked if I could type my story on the computer and my teacher agreed.
6. "I'll be ninety on Saturday," my gran whispered.
"She's doing a parachute jump to celebrate," my mum added.
7. My friend, Amy, told us she was moving house and we said we didn't want her to go.
8. "I'm cold," the boy said.
"Well run up and down the stairs to warm up a bit," his mum responded.
9. Reuben told the life guard he had seen a boat in trouble so the life guard said he would see for himself.
10. "Get out of my garden," the next door neighbour barked, but the dog just said, "Woof woof!"

I pleaded with
the dragon not
to eat me.

The teacher told the
children not to
whisper in assembly.

Our teacher said,
"Open that window."

I called to Jack
to throw the ball
to me.

Mum asked where
the hammer was.

Our teacher asked
us to open a
particular window.

I pleaded, "Please
don't eat me," with
the dragon.

"Don't whisper in
assembly," the teacher
told the children.

Our teacher said
we could open any
window.

Our teacher said,
"Open any window
you like."

The dragon said it
had plans to eat me.

"Jack," I shouted.
"Throw the ball to me."

Mum asked, "Where's
the hammer?"

The dragon said,
"I plan to eat you."

Active and Passive Sentences

A sentence is written in **active voice** when the subject of the sentence performs the action in the sentence.
e.g. **The girl was washing the dog.**

A sentence is written in **passive voice** when the subject of the sentence has an action done to it by someone or something else.
e.g. **The dog was being washed by the girl.**

Task One

Copy out each of these sentences and then write whether it is in **active** or **passive** voice. (*Hint: In these sentences look for the person who is carrying out the action*).

1. Mark was eating an apple.
2. The picture was painted by Bob.
3. Tina opened the present.
4. The phone was being used by Mr Thomas.
5. The card was made by Fred.
6. James hit the tree with his stick.
7. The man jumped off the step.
8. Daniel was watching the birds.

Task Two

Copy out each of these sentences and then write whether it is in **active** or **passive** voice.

1. The key was used to open the door.
2. The crisp packet was thrown away.
3. James couldn't see the man.

4. The boy picked up the coin.
5. The egg was laid by the bird.
6. Susan found her car keys.
7. The policeman chased after Fred. ****Think carefully about this one****
8. The car was fixed. ****Think carefully about this one****
9. The pencil had been lost. ****Think carefully about this one****
10. Mark was given a warning. ****Think carefully about this one****

Task Three

These are all written in **passive** voice. Change each sentence into **active** voice.

1. The football was kicked by Luke.
2. The knife was left on the table by Julie.
3. The milk had been knocked over by a cat.
4. The car had been driven into a wall by a naughty child.
5. The windows had been washed. ****Think carefully about this one****

Task Four

These are all written in **active** voice. Change each sentence into **passive** voice.

1. The actors had performed the play by Shakespeare.
2. A stone smashed the window.
3. The boys pushed the tree over.
4. James climbed the ladder.
5. Sam baked a big cake.
6. Fred told Johnny a lie. ****Think carefully about this one****

Extension

Find examples of sentences written in **passive** voice in your reading book and the books in the class library. Can you change each of the sentences into **active** voice?

Extract from


TOUCHING THE VOID

by
Joe Simpson

Chapter 6: The Final Choice

English mountaineer, Sir Chris Bonnington, describes *Touching the Void* as one of the most incredible stories of survival he has ever read. The book is written by Joe Simpson who, in 1985, climbed the 6356m high mountain called Siula Grande in the Andes in Peru. His climbing partner was Simon Yates. The two climbers made it to the summit, but on their way back down, hit disaster. Joe fell and broke his leg. The pair struggled on down the dangerous snowy slopes, tied together for safety. But then Joe had a second fall - and this was even worse. He had slipped over the edge of a sheer drop and was in danger of pulling Simon over the edge after him. Here, Simon describes what happened next ...

It had been nearly an hour since Joe had gone over the drop. I was shaking with cold. My grip on the rope kept easing despite my efforts. The rope slowly edged down and the knot pressed against my right fist. I can't hold it, can't stop it. The thought overwhelmed me. The snow slides and wind and cold were forgotten. I was being pulled off. The seat moved beneath me, and snow slipped away past my feet. I slipped a few inches. Stamping my feet deep into the slope halted the movement. God! I had to do something!



The knife! The thought came out of nowhere. Of course, the knife. Be quick, come on, get it.

The knife was in my sack. It took an age to let go a hand and slip the strap off my shoulder, and then repeat it with the other hand. I braced the rope across my thigh and held on to the plate with my right hand as hard as I could. Fumbling at the catches on the rucksack, I could feel the snow slowly giving way beneath me. Panic threatened to swamp me. I felt in the sack, searching desperately for the knife. My hand closed round something smooth and I pulled it out. The red plastic handle slipped in my mitt and I nearly dropped it. I put it in my lap before tugging my mitt off with my teeth. I had already made the decision. There was no other option left to me. The metal blade stuck to my lips when I opened it with my teeth.

I reached down to the rope and then stopped. The slack rope! Clear the loose rope twisted round my foot! If it tangled it would rip me down with it. I carefully cleared it to one side, and checked that it all lay in the seat away from the belay plate. I reached down again, and this time I touched the blade to the rope.

It needed no pressure. The taut rope exploded at the touch of the blade, and I flew backwards into the seat as the pulling strain vanished. I was shaking.

Leaning back against the snow, I listened to a furious hammering in my temple as I tried to calm my breathing. Snow hissed over me in a torrent. I ignored it as it poured over my face and chest, spurting into the open zip at my neck, and on down below. It kept coming. Washing across me and down after the cut rope, and after Joe.

I was alive, and for the moment that was all I could think about. Where Joe was, or whether he was alive, didn't concern me in the long silence after the cutting. His weight had gone from me. There was only the wind and the avalanches left to me.

When at last I sat up, the slack rope fell from my hips. One frayed end protruded from the belay plate – he had gone. Had I killed him? – I didn't answer the thought, though some urging in the back of my mind told me that I had. I felt numb. Freezing cold, and shocked into a numb silence, I stared bleakly into the swirling snow beneath me wondering at what had happened. There was no guilt, not even sorrow. I stared at the faint torch beam cutting through the snow and felt haunted by its emptiness. I was tempted to shout to him, but stifled the cry. It wouldn't be heard. I could be sure of that. I shivered in the wind as the cold crept up my back. Another avalanche swept over me in the darkness. Alone on a storm-swept avalanching mountain face, and becoming dangerously cold, I was left with no choice but to forget about Joe until the morning.

... A few days later, Simon made it back to his base camp. He had frost bite, was completely exhausted and was feeling terrible about what had happened to Joe. But unknown to him, Joe was still alive. Although badly hurt, he was slowly crawling through the snow, and through icy cold river beds, to safety. He finally dragged himself back to the camp, crying out in the dark night, "Help me ... please help." He had lived to tell the tale.

In the last few pages of *Touching the Void*, Joe describes how hard it has been to get over what happened all those years ago on Siula Grande. And Simon describes how he felt at that awful moment when he had to cut the rope and let his friend fall.

TOUCHING THE VOID

Touching the Void by Joe Simpson is published by Jonathan Cape. Reprinted by permission of The Random House Group Ltd.

Touching the Void

1. In the first paragraph, 'Touching the Void' is written

_____.

This is because _____

2. The expression 'my grip on the rope kept easing despite my best efforts' means _____

3. When it says 'the thought overwhelmed me', I would be feeling _____

4. A synonym for 'halted' is _____

5. If 'panic threatened to swamp me', this means _____

6. A 'mitt' is _____

7. I think that the metal blade stuck to his lips when he opened it with his teeth' because _____

8. 'Protruded' means _____

9. 'Stifled' means _____

10. I think that Simon was/was not right to do what he did to Joe because _____

11. Initially, I think that Joe would have felt _____
_____because _____

Later, after he returned to safety and the camp, I think that he would have felt _____
because _____

12. A 'void' is _____

13. In my opinion, the book's title is _____

B

Use the number line on page 8.

- 1 Count on 7 from -9
- 2 Count on 6 from -3
- 3 Count on 10 from -6
- 4 Count on 8 from -1
- 5 Count back 5 from 2
- 6 Count back 12 from 8
- 7 Count back 7 from 0
- 8 Count back 6 from 5

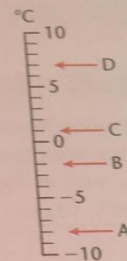
Copy and complete the sequences.

- 9 4 3 2 1
- 10 -5 -4 -3 -2
- 11 -2 -4 -6 -8
- 12 6 4 -4 -6
- 13 -10 -8 0 2
- 14 9 7 5 3

- 15 What temperatures are shown by the letters?

- 16 Give the difference in temperature between:

- a) A and C
- b) B and D
- c) B and C
- d) A and D



- 17 What would the temperature be if it was:

- a) at A and rose 10°
- b) at B and rose 5°
- c) at C and fell 10°?

Put > or < in each box.

- 18 0 -2
- 19 -5 5
- 20 -4 3
- 21 -1 -2
- 22 0 1
- 23 -2 -8
- 24 -1 0
- 25 7 -9

C

Find the difference between:

- 1 -2 and -5
- 2 -7 and 1
- 3 4 and -1
- 4 -1 and 9
- 5 -6 and -1
- 6 0 and -3
- 7 2 and -4
- 8 -5 and 4.

Put these numbers in order, smallest first.

- 9 1 -3 2
0 -5
- 10 2 4 -1
-3 1
- 11 0 2 -4
-1 3
- 12 1 -5 0
-2 5

Copy and complete these tables showing changes in temperature.

13

Sunday	Change	Monday
-2°C	+4°C	
1°C	-3°C	
0°C	-5°C	
3°C	-4°C	
-5°C	+3°C	
-3°C	+5°C	

14

Sunday	Change	Monday
3°C		-3°C
-4°C		-1°C
-1°C		5°C
5°C		-7°C
0°C		-4°C
-6°C		3°C

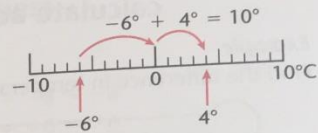
NEGATIVE NUMBERS 1

7

TARGET To use negative numbers and calculate intervals across zero.

Examples

Find the temperature which is 10°C more than -6°C .
Answer 4°C .



A

Copy and complete.

- 1 $-4 \quad -3 \quad -2 \quad \square \quad \square \quad \square \quad 2$
- 2 $6 \quad 4 \quad 2 \quad 0 \quad \square \quad \square \quad \square$
- 3 $-12 \quad -9 \quad -6 \quad -3 \quad \square \quad \square \quad \square$
- 4 $3 \quad 2 \quad 1 \quad \square \quad \square \quad \square \quad -3$
- 5 $-5 \quad \square \quad \square \quad \square \quad 3 \quad 5 \quad 7$
- 6 $16 \quad 12 \quad 8 \quad 4 \quad \square \quad \square \quad \square$

Put each set of numbers in order, smallest first.

- 7 $\begin{matrix} 1 & -6 & 3 \\ -5 & & \\ 8 & -2 & \end{matrix}$

- 9 $\begin{matrix} -3 & 6 \\ 2 & & 1 \\ 0 & -7 & \end{matrix}$

- 8 $\begin{matrix} -3 & 4 \\ 0 & & -1 \\ 2 & -6 & \end{matrix}$

- 10 $\begin{matrix} 3 & -8 \\ -4 & & 2 \\ -2 & 5 & \end{matrix}$

B

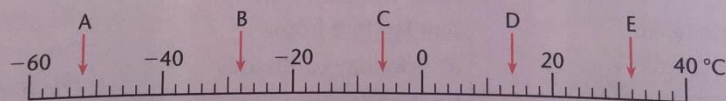
Copy and complete.

- 1 $10 \quad 7 \quad 4 \quad \square \quad \square \quad \square$
- 2 $-6 \quad -4 \quad \square \quad \square \quad \square \quad 4$
- 3 $-15 \quad \square \quad -5 \quad \square \quad 5 \quad \square$
- 4 $\square \quad \square \quad \square \quad 2 \quad 6 \quad 10$
- 5 $5 \quad 3 \quad 1 \quad \square \quad \square \quad \square$
- 6 $\square \quad \square \quad \square \quad 2 \quad 5 \quad 8$

Find the temperature which is:

- 7 5°C more than -2°C
- 8 8°C more than -10°C
- 9 7°C more than -3°C
- 10 4°C more than -4°C
- 11 9°C more than -7°C
- 12 6°C more than -8°C
- 13 10°C less than 6°C
- 14 7°C less than 2°C
- 15 9°C less than 0°C
- 16 12°C less than 4°C
- 17 8°C less than 7°C
- 18 6°C less than -5°C .

C



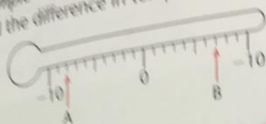
- 1 What temperatures are shown by the letters?
- 2 Give the difference in temperature between:
 - a) C and D
 - b) B and C
 - c) A and E
 - d) B and D
- 3 What would the temperature be if it was:
 - a) at A and rose 24°C
 - b) at D and fell 30°C
 - c) at C and fell 18°C
 - d) at B and rose 32°C ?

NEGATIVE NUMBERS 2

TARGET To use negative numbers in the context of temperature and calculate across zero.

Example

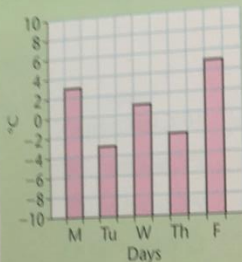
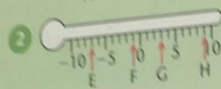
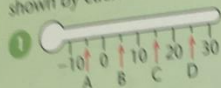
Find the difference in temperature between A and B.



$$\begin{aligned} A &= -8^{\circ}\text{C} & -8^{\circ}\text{C} \rightarrow 0^{\circ}\text{C} &= 8^{\circ}\text{C} \\ B &= 7^{\circ}\text{C} & 0^{\circ}\text{C} \rightarrow 7^{\circ}\text{C} &= 7^{\circ}\text{C} \\ & & -8^{\circ}\text{C} \rightarrow 7^{\circ}\text{C} &= (8 + 7)^{\circ}\text{C} = 15^{\circ}\text{C} \end{aligned}$$

Answer 15°C

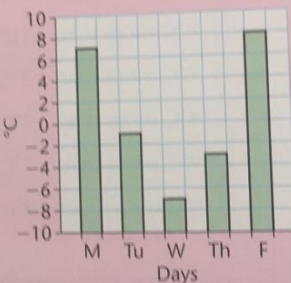
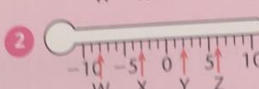
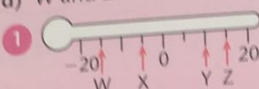
A Write the temperature shown by each letter.



- What was the coldest temperature recorded?
- On which days was the temperature below 0°C ?
- What was the fall in temperature from:
 - Monday to Tuesday
 - Wednesday to Thursday?
- What was the rise in temperature from:
 - Tuesday to Wednesday
 - Thursday to Friday?

B For each thermometer, find the difference between:

- X and Z
- W and Y
- X and Y
- W and Z.



- What was the fall in temperature from:
 - Monday to Tuesday
 - Tuesday to Wednesday?
- What was the rise in temperature from:
 - Wednesday to Thursday
 - Thursday to Friday?

C

- Copy and complete this table showing the maximum and minimum temperatures for different places.

Max.	Range	Min.
17°C	22°C	-5°C
28°C	46°C	
11°C	54°C	
-4°C	23°C	
46°C	52°C	
2°C		-37°C
35°C		-16°C
53°C		-7°C
-9°C		-23°C
	66°C	-35°C
	47°C	-54°C
	53°C	-28°C
	28°C	-41°C

- Find the range between the highest and lowest temperature ever recorded in each UK country.

Country	High	Low
England	38.5°C	-26.1°C
Scotland	32.9°C	-27.2°C
Wales	35.2°C	-23.3°C
N.I.	30.8°C	-18.7°C

TARGET To add and subtract whole numbers using written methods.

Examples

$$\begin{array}{r} 84\ 759 \\ + 25\ 963 \\ \hline 110\ 722 \\ 11\ 11 \end{array}$$

$$\begin{array}{r} 8\ 11\ 1410\ 1 \\ 92\ 813 \\ - 17\ 548 \\ \hline 74\ 965 \end{array}$$

A

Copy and complete.

1 $2748 + 1875$ 7 $3453 - 1947$

2 $4583 + 1679$ 8 $5215 - 2340$

3 $5469 + 3537$ 9 $9491 - 6626$

4 $3795 + 1648$ 10 $4106 - 1893$

5 $6857 + 2379$ 11 $7342 - 3587$

6 $4674 + 2956$ 12 $6530 - 1745$

- 13 North Yorkshire has an area of 8309 km^2 . South Yorkshire's area is 1560 km^2 . How much larger is the more northerly county?



B

Copy and complete.

1 $29\ 756 + 26\ 245$ 7 $85\ 144 - 32\ 375$

2 $56\ 945 + 27\ 382$ 8 $32\ 317 - 28\ 698$

3 $37\ 567 + 21\ 964$ 9 $64\ 523 - 48\ 549$

4 $48\ 378 + 39\ 776$ 10 $71\ 431 - 52\ 485$

5 $25\ 693 + 15\ 858$ 11 $93\ 250 - 34\ 593$

6 $63\ 859 + 16\ 432$ 12 $46\ 365 - 36\ 398$

- 13 During the year 32 786 fiction and 18 259 non-fiction books are bought from a shop. How many books are bought altogether?

- 14 A warehouse has 63 170 sacks of potatoes in stock. 29 485 sacks are dispatched. How many sacks are left?

C

Set out as in the example.

1 $166\ 594 + 93\ 889$

2 $305\ 737 + 299\ 390$

3 $578\ 479 + 412\ 791$

4 $243\ 685 + 188\ 556$

5 $459\ 368 + 249\ 767$

6 $387\ 846 + 316\ 858$

7 $424\ 512 - 236\ 678$

8 $343\ 354 - 156\ 759$

9 $602\ 635 - 236\ 797$

10 $833\ 128 - 548\ 199$

11 $590\ 243 - 496\ 475$

12 $911\ 570 - 256\ 992$

- 13 A store has takings of £639 827 in a week. During the next week takings rise by £275 984. What are the store's takings in the second week?

- 14 The population of Longport is 726 540. The population of Bridgeford is 559 856. How many more people live in Longport than Bridgeford?

SHORT MULTIPLICATION 1

11

TARGET To practise short multiplication of whole numbers and decimals.

Examples

Work from the right and carry.

$$\begin{array}{r} 3975 \\ \times 7 \\ \hline 27825 \\ 653 \end{array}$$

$$\begin{array}{r} 40.28 \\ \times 6 \\ \hline 241.68 \\ 14 \end{array}$$

Align decimal points.

A

Copy and complete.

1 138×3 7 90.5×4

2 746×2 8 87.2×8

3 295×6 9 94.2×3

4 327×9 10 73.5×5

5 680×5 11 51.9×9

6 194×7 12 17.4×6

Work out

13 827×4 21 31.9×2

14 263×7 22 46.3×4

15 508×2 23 65.2×9

16 436×8 24 20.8×7

17 657×3 25 38.4×5

18 386×6 26 9.5×8

19 840×9 27 5.39×3

20 924×5 28 72.6×6

B

Copy and complete.

1 2067×5 7 84.35×3

2 1859×4 8 376.2×9

3 4283×8 9 253.8×7

4 6174×7 10 39.26×4

5 7398×11 11 94.07×12

6 5916×6 12 617.5×8

Work out

13 2348×6 21 46.52×11

14 7290×3 22 704.8×6

15 3582×5 23 65.37×4

16 1594×9 24 91.24×5

17 7408×4 25 428.6×7

18 6815×12 26 37.05×12

19 2936×8 27 285.7×9

20 5049×7 28 50.79×8

C

Work out

1 13269×6

2 54706×3

3 29548×12

4 161437×5

5 47095×8

6 135176×7

7 269840×9

8 183501×11

9 392.19×4

10 73.867×2

11 9267.4×11

12 24.908×7

13 613.57×9

14 52.836×8

15 36.179×12

16 274.85×6

17 A delivery firm buys seven new vans, each costing £16 549. What is the total cost of the vans?

18 One box of tiles weighs 23.875 kg. What is the total weight of six boxes?

LONG MULTIPLICATION 1

13

TARGET To use a formal written method for long multiplication.

Examples

$$\begin{array}{r} 343 \\ 1758 \\ \times 27 \\ \hline 12306 \quad (1758 \times 7) \\ 35160 \quad (1758 \times 20) \\ \hline 47466 \end{array}$$

$$\begin{array}{r} 251 \\ 4392 \\ \times 36 \\ \hline 26352 \\ 131760 \\ \hline 158112 \\ 11 \end{array}$$

A

Copy and complete.

$$\begin{array}{r} 68 \\ \times 13 \\ \hline \end{array} \quad \begin{array}{l} (68 \times 3) \\ (68 \times 10) \end{array}$$

$$\begin{array}{r} 492 \\ \times 18 \\ \hline \end{array} \quad \begin{array}{l} (492 \times 8) \\ (492 \times 10) \end{array}$$

$$\begin{array}{r} 36 \\ \times 24 \\ \hline \end{array} \quad \begin{array}{l} (36 \times 4) \\ (36 \times 20) \end{array}$$

$$\begin{array}{r} 267 \\ \times 35 \\ \hline \end{array} \quad \begin{array}{l} (267 \times 5) \\ (267 \times 30) \end{array}$$

Work out

- | | |
|------------------|--------------------|
| 5 63×42 | 9 174×34 |
| 6 57×26 | 10 219×28 |
| 7 49×19 | 11 438×17 |
| 8 85×23 | 12 365×45 |

B

Copy and complete.

$$\begin{array}{r} 1247 \\ \times 26 \\ \hline \end{array} \quad \begin{array}{l} (1247 \times 6) \\ (1247 \times 20) \end{array}$$

$$\begin{array}{r} 2538 \\ \times 14 \\ \hline \end{array} \quad \begin{array}{l} (2538 \times 4) \\ (2538 \times 10) \end{array}$$

$$\begin{array}{r} 1673 \\ \times 38 \\ \hline \end{array} \quad \begin{array}{l} (1673 \times 8) \\ (1673 \times 30) \end{array}$$

$$\begin{array}{r} 3496 \\ \times 25 \\ \hline \end{array} \quad \begin{array}{l} (3496 \times 5) \\ (3496 \times 20) \end{array}$$

Work out

- | | |
|--------------------|---------------------|
| 5 5728×16 | 9 6257×43 |
| 6 4359×37 | 10 1985×24 |
| 7 2584×29 | 11 4874×39 |
| 8 3046×35 | 12 7169×48 |

C

Work out

- 1 24135×28
- 2 57248×19
- 3 42186×34
- 4 16259×45
- 5 35367×26
- 6 49526×37
- 7 21687×85
- 8 52958×64
- 9 249×183
- 10 376×256
- 11 458×149
- 12 864×572
- 13 327×265
- 14 483×174
- 15 739×328
- 16 562×437
- 17 One can weighs 387 g. There are 36 cans in a box. What is the total weight of 25 boxes in kilograms?

2 Complete the column additions.






		7	4	3	5
		+	2	4	6

[illegible]

What do you notice about each addition?
What stays the same? What changes?

3 Complete the additions. Use the place value chart to help you.

[illegible][illegible]

Tth	Th	H	T	O
				

d) $23,245 + 14,323 =$

b) $23,245 + 14,328 =$

c) $23,245 + 14,846 =$



d) + 23,245 = 35,490



4 Use the column method to work out the additions.



a) £36,000 + £19,420

c) $843 \text{ cm} + 15,611 \text{ cm}$



b) 40,720 g + 6,872 g

d) £17,320 + £6,009 + £34,871



5 The table shows the number of home and away fans attending three football matches.

Match	Home fans	Away fans
1	53,640	12,930
2	42,630	18,340
3	35,480	32,490

Which match had the greatest total attendance?

1001

6 Complete the additions.

[illegible]

(5)

[illegible]

7 Complete the additions.

d) $735 + \boxed{} = 1,000$

b) $1,026 + \boxed{} = 10,000$

c) + 872 = 10,000

8 Mr Hall has written these additions on the board.

$$324,846 + 12,475$$

$17,654 + 2,935$

Dexter's workings

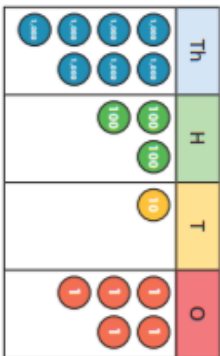
Eva's workings

$$\begin{array}{r} 324846 \\ + 12475 \\ \hline 336211 \end{array}$$
$$\begin{array}{r} 17654 \\ + 2935 \\ \hline 47004 \end{array}$$

Explain the mistakes that Dexter and Eva have made.

Subtract whole numbers with more than 4 digits (column method)

1



Complete the subtractions.

a)

		7	3	1	5
		-	2	1	0
					4

c)

			7	3	1
			-	5	4
				2	0

b)

			7	3	1
			-	3	2
				4	1

2

Complete the calculations.

a)

			8	4	3
			-	2	1
				0	4

b)

			£	8	8
			-	£	6
				1	0
				0	0



c)

			4	6	8
			-	1	9
				0	2
				2	4

d)

			3	4	5
			-		6
					7
					9

3

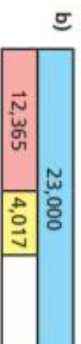
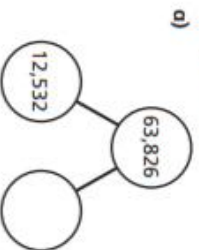
A family has £22,658 in the bank. They spend £3,600 on a holiday. How much money do they have left?

4

It is 10,553 miles from London to Sydney. It is 9,929 miles from New York to Sydney. How much further away is Sydney from London than from New York?

 miles

- 5 Complete the models.



- 6 Mr Hall has written these subtractions on the board.

$$45,541 - 25,865$$

$$68,945 - 34,758$$

Rosie's workings

$$\begin{array}{r} 25865 \\ - 45541 \\ \hline 20324 \end{array}$$

Whitney's workings

$$\begin{array}{r} 68945 \\ - 34758 \\ \hline 34213 \end{array}$$

Explain the mistakes that Rosie and Whitney have made.

- 7 Complete the subtractions.

a) $10,004 - 9,995 =$

b) $10,000 - 6,727 =$

c) $15,923 - 9,998 =$

How did you work this out?

Is there another method you could use?

- 8 Teddy and Jack are playing a computer game.

Teddy scores 55,890 points.

Jack scores 36,475 points fewer than Teddy.

- a) How many points does Jack score?

- b) How many points do they have altogether?

- 9 Here are some digit cards.

1	5	8	9
---	---	---	---

Ron makes a 4-digit number with the cards.

Eva makes a 4-digit number with the cards.

The difference between their numbers is between 1,000 and 3,000

What numbers could Ron and Eva have made?

$$320 + 719 = 1,039$$

1,039 - 719 320 - 1,039


719 - 320 1,039 - 320

$$4,096 - 2,356 = 1,740$$
$$4,096 + 2,356$$
$$1,740 + 2,356$$

9	

	1	3	6	0
+	2	9	7	3
	4	3	3	3

	8	2	6	4
-	3	1	4	2
	5	1	2	2

$$\begin{array}{r} 12350 \\ + 7903 \\ \hline 91380 \end{array}$$


5 Match the inverse calculations.

$$2,482 + 6,428 = 8,912$$

$$5,271 + 4,212 = 9,483$$

$$5,984 - 3,172 = 2,812$$

$$8,912 - 6,428 = 2,482$$

$$9,483 - 5,271 = 4,212$$

$$8,912 - 5,271 = 3,641$$

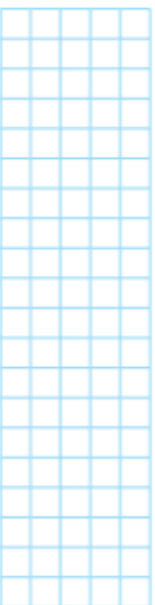
$$8,912 = 3,641 + 5,271$$

$$5,984 = 3,172 + 2,812$$

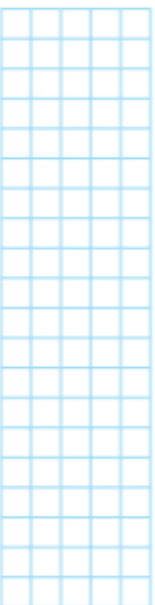
6 Complete the calculations.

Use inverse operations to check your answers.

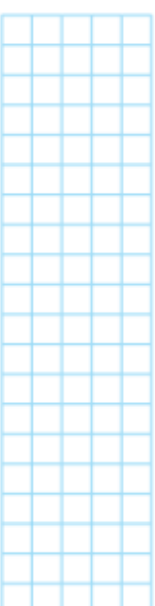
a) $763 + 4,072 =$



b) $8,711 - 1,053 =$



c) $2,351 + 14,706 =$



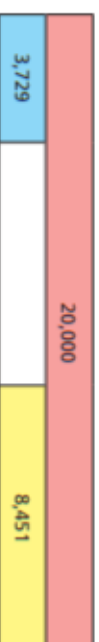
7 Alex thinks of a number.



When I add
4,550 to my number
I get 7,460

What number did Alex start with?

8 Here is a bar model.



Think of two different ways that you can find the missing part.
What is the missing part?

Multi-step addition and subtraction problems

1

Eva is reading a book before bedtime.

On Monday she reads 38 pages.

On Tuesday she reads 6 pages more than she did on Monday.

a) How many pages does she read on Tuesday?

b) How many pages does she read altogether on Monday and Tuesday?

c) There are 123 pages in the book altogether.
How many pages does Eva have left to read?

2

Here are two number cards.

800

?

The sum of the two cards is 2,900

What is the difference between the two cards?

3

Mo has £1,000 to spend. He buys a TV and a games console.



Does Mo have enough money left to buy the phone? _____

Show your workings.

4

Two families each have £1,800

The table shows how much they need to spend.

	The Websters	The Changs
Housing	£465	£550
Food	£420	£380
Bills	£120	£135

Which family has the most money left?


How much more money do they have?

5

There are 15,600 people at a concert.
There are 9,050 adults.
The rest are children.
How many more adults than children are there?


6

Jack, Whitney and Amir are counting their sticker collections.




Jack

I have twice as many stickers as Whitney.



I have 100 stickers fewer than Whitney.



Amir

They have 900 stickers altogether.
How many stickers do they each have?



7

Two numbers have a difference of 1,200 and a total of 6,484.
What are the two numbers?

 and

8


















Three 4-digit numbers add together to make 10,000.
One of the numbers is 2,560.
Complete the sentences to describe the other numbers.
The total of the two numbers must be
The two numbers could be and
One of the numbers cannot be greater than

Write your own problem like this for a partner to solve.

Jack has stickers.
Amir has stickers.
Whitney has stickers.

Multiply 4-digits by 1-digit

1 Complete the sentences to describe the multiplication.

Th	H	T	O
 	 		  
 	 		  
 	 		  

There are ones altogether.

There are tens altogether.

There are hundreds altogether.

There are thousands altogether.

$2,213 \times 3 =$	
--------------------	--

2 Complete the multiplication.

Use the place value chart to help you.

Th	H	T	O







x		2	1	0	2	



3 A football stadium holds 2,214 people.

The stadium is full for 4 matches in a row.

What was the attendance for all 4 matches?

Th	H	T	O
 	 		   
 	 		   
 	 		   

		2	2	1	4
	x				

The attendance for all 4 matches was

4 Nijah is calculating $2,430 \times 3$

She makes this place value chart to help her.

Th	H	T	O
	100 100	10 10 10	1 1
	100 100	10 10 10	1 1
	100 100	10 10 10	1 1

She gets the answer 729

What mistake has Nijah made?

What is the correct answer?

10



5 Complete the multiplications.

a) $3,126 \times 3 =$

c) $4,132 \times 6 =$

b) $4,812 \times 2 =$

d) $1,502 \times 5 =$

6 Ron is working out $7,423 \times 0$

$$\begin{array}{r} 7\ 4\ 2\ 3 \\ \times \quad 0 \\ \hline 7\ 4\ 2\ 3 \end{array}$$



Do you agree with Ron? _____
Did Ron have to use a column method? Is there a quicker way?

7 Work out these multiplications.

$2,846 \times 2 =$

$2,846 \times 4 =$

$2,846 \times 8 =$

What do you notice about the answers?

8

$$248 \times 10 = 2,480$$

Without using the formal method, how could you use this fact to calculate 248×97 ?

Check your answer using the formal method.

Which method was easier?

9 Use each digit card once to write a multiplication.

1

2

3

4

5

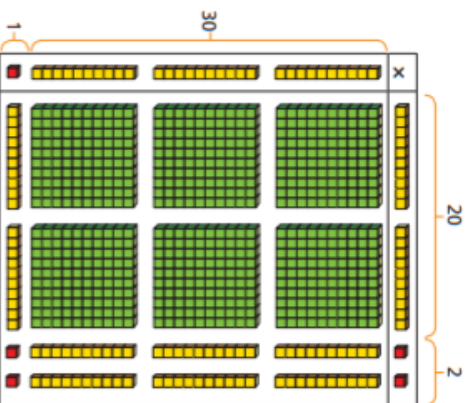
How many different products can you find?

What is the closest product to 8,000?

Multiply 2-digits (area model)

- 1 Kim is using base 10 to work out 31×22

Use Kim's model to help you complete the sentences.



There are ones altogether.

There are tens altogether.

There are hundreds altogether.

$31 \times 22 =$

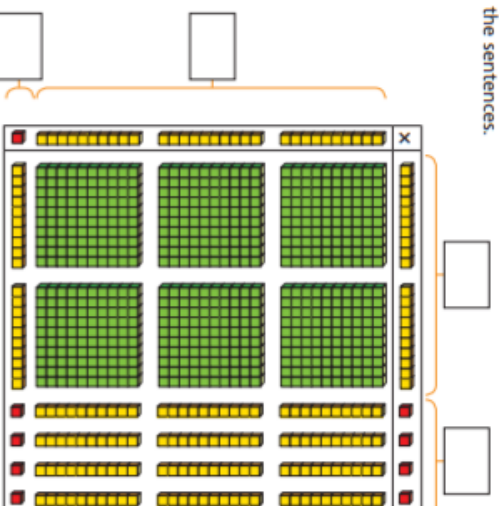
- 2 Use base 10 to work out the multiplications.

a) $12 \times 14 =$

b) $23 \times 13 =$

- 3 Amir is using base 10 to calculate 31×24

a) Add the missing information to the area model and complete the sentences.



There are ones altogether.

There are tens altogether.

There are hundreds altogether.

b) Describe any exchanges you need to make.

c) Complete the multiplication.

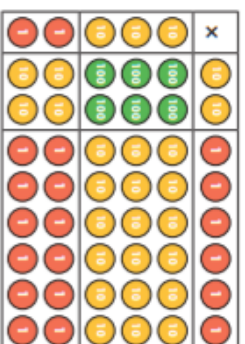
$31 \times 24 =$

- 4 Use base 10 to work out these multiplications.

a) $25 \times 15 =$

b) $36 \times 12 =$

- 5 Use the place value counters to complete the multiplication grid and sentence.



x	20	6
30		
2		

26 x 32 =

- 6 Use an area model to help you complete the multiplication.

a) 28 x 14 =

c) 35 x 22 =

x	20	8
10		
4		

b) 27 x 16 =

d) 45 x 36 =

x		

- 7 Complete the multiplications.

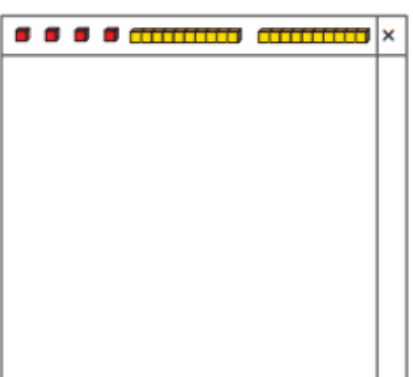
21 x 24 =

31 x 25 =

18 x 26 =

8 24 x = 768

Complete the area model to find the missing number.



- 9 Use each digit card once to write a multiplication.

2 3 4 5

x =

How many different answers can you find?

How many products are there between 1,000 and 1,500?

Multiply 2-digits by 2-digits



1 Complete the multiplications.

$$= 9 \times 9 (a)$$

d) $7 \times 9 =$

$$= 0.9 \times 9$$

$7 \times 90 =$

b) $12 \times 8 =$

e) $21 \times 4 =$

$12 \times 80 =$

$21 \times 40 =$

c) $32 \times 3 =$

f) $48 \times 3 =$

$32 \times 30 =$

$48 \times 30 =$

How did you work out your answers?

2 Fill in the missing numbers.

	x		4	3	
			1	3	
	1	2	9		
4	3	0			

(43×3)

(43×10)

x					
1	0	5			
4	2	0			

(21 x 5)

(21 x 20)

(5)

	x							
		2	1					
		6	6					
1 _i		2	6					
2		1	0					

100

ω

Mo is calculating 34×23


Here is his working.

What mistake has Mo made?

What is the correct answer?

You may use the blank grid

for your workings.

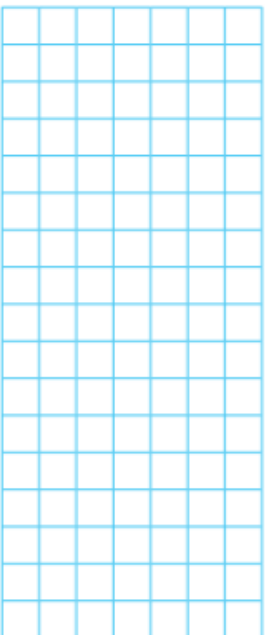
$$\begin{array}{r} 34 \\ \times 102 \\ \hline 68 \\ 0 \\ 340 \\ \hline 3468 \end{array}$$


4

Work out the multiplications.

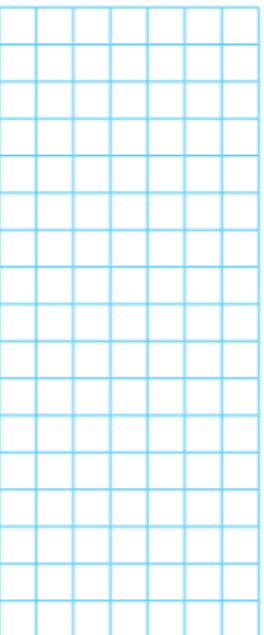
a) $52 \times 34 =$

c) $46 \times 64 =$



b) $22 \times 56 =$

d) $47 \times 63 =$



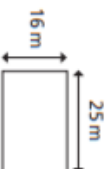
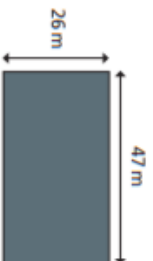
5

A machine prints 92 labels every minute.

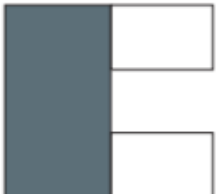
How many labels will it print in three-quarters of an hour?

6

Here are two rectangles.



a) What is the area of this compound shape?



b) What is the area of the shaded part?



Compare methods and answers with a partner.
What is the same and what is different?

Negative numbers

- 1 Complete the number line.



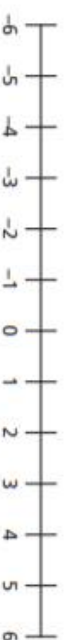
- 2 The table shows the temperatures in four cities in the world.

Leeds	Barcelona	Chicago	Sydney
-5°C	7°C	-8°C	16°C

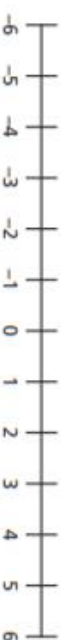
- a) How many degrees colder is it in Barcelona than Sydney?
- b) How many degrees warmer is it in Leeds than Chicago?
- c) How many degrees colder is it in Leeds than Sydney?
- d) What is the difference between the temperature in Barcelona and Chicago?
- e) The temperature in Leeds increases by 4°C . What is the new temperature?
- f) The temperature in Chicago decreases by 3°C . What is the new temperature?

- 3 Complete the sentences. Use the number lines to help you.

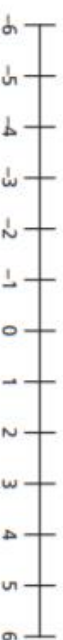
- a) 5 more than -3 is



- b) 4 less than 1 is



- c) 4 more than -4 is



- d) 3 less than -1 is



- 4

A ship sits in the sea.

The base of the ship is 5 m below sea level.

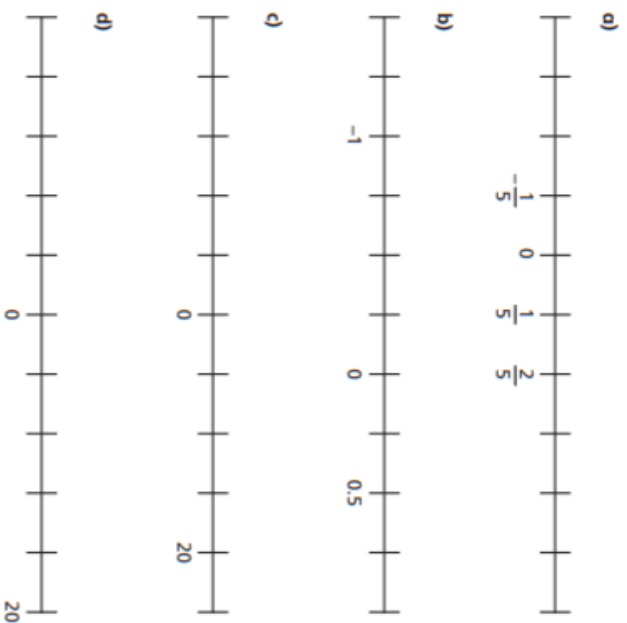
The top of the ship is 11 m above sea level.

How tall is the ship?

5 Complete the number sentences.

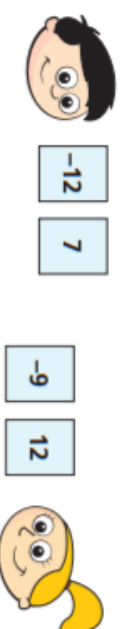
- a) $-3 + 5 = \square$ e) $3 - 5 = \square$
 b) $1 - 4 = \square$ f) $-1 - 4 = \square$
 c) $-4 + 4 = \square$ g) $-4 - 4 = \square$
 d) $-1 - 3 = \square$ h) $-1 + 3 = \square$

6 Complete the number lines.



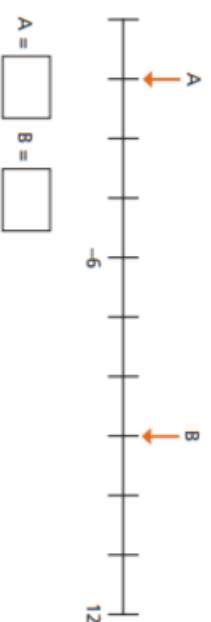
7 Dexter and Eva are playing a game.

They each choose 2 cards and add up their total points.
 The winner is the person with the highest total.



Who has won the game and by how many points?


8 Work out the values of A and B.




Complete the calculations.

A + B = \square
 A - B = \square


Add and subtract integers

c) $5,236 + 424,850$ 

d) $30,594 - 15,423$



?	750	1,500
2,354		



c) $23,500 +$

[illegible]

1001

[illegible]
$$8,000,500 - 6,100,000$$
 $1,250,000 + 900,000$

double 600,000

123,999 + 84,178

200,000

one million

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

2 million

Talk about your answers with a partner.

[illegible][illegible]

	-	2		5	5
	2		0	5	
		9	0		5

[illegible]

5

Four players have scored points in a video game.

Player	Score
Annie	350,250
Jack	175,900
Mo	99,750
Dora	?

Dora's score is 88,300 less than Jack's.

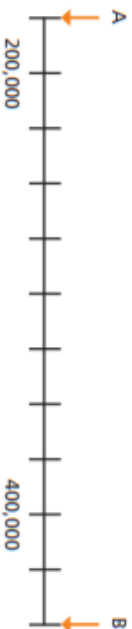
a) What is Dora's score?

b) What is the difference between the highest score and the lowest score?

c) What is the total of all the players' scores?

6

What is the difference between A and B?



The difference between A and B is

7

135790

Use each digit card once to complete the calculation.

- =

Try different combinations of digits to get an answer that is as close to 500 as possible.

8

I am thinking of a number. I add 200,000, then subtract half a million, then add a quarter of a million. Then I round to the nearest 10, which is two million and fifty.



What number could Alex have been thinking of to start with?

Alex could have been thinking of

