

Full name: ..... **READING HOMEWORK – PART 2**

Worksheet 9	**Topic: Education System**		**WID:** IELTS5.5_09_R
Skills	**IELTS Reading:** - skim a text to locate information quickly - complete a flow-chart - Flow-chart - Diagram - Table completion	**..... pts/10**	**QR code:**

Exercise 4. [IELTS Reading: Flow chart completion- Diagram completion] Read the passage and answer the questions.

Migratory Beekeeping

Taking Wing

To eke out a full-time living from their honeybees, about half the nation's 2,000 commercial beekeepers pull up stakes each spring, migrating north to find more flowers for their bees. Besides turning floral nectar into honey, these hardworking insects also pollinate crops for farmers -for a fee. As autumn approaches, the beekeepers pack up their hives and go south, scrambling for pollination contracts in hot spots like California's fertile Central Valley.

Of the 2,000 commercial beekeepers in the United States about half migrate This pays off in two ways Moving north in the summer and south in the winter lets bees work a longer blooming season, making more honey — and money — for their keepers. Second, beekeepers can carry their hives to farmers who need bees to pollinate their crops. Every spring a migratory beekeeper in California may move up to 160 million bees to flowering fields in Minnesota and every winter his family may haul the hives back to California, where farmers will rent the bees to pollinate almond and cherry trees.

Migratory beekeeping is nothing new. The ancient Egyptians moved clay hives, probably on rafts, down the Nile to follow the bloom and nectar flow as it moved toward Cairo. In the 1880s North American beekeepers experimented with the same idea, moving bees on barges along the Mississippi and on waterways in Florida, but their lighter, wooden hives kept falling into the water. Other keepers tried the railroad and horse- drawn wagons, but that didn't prove practical. Not until the 1920s when cars and trucks became affordable and roads improved, did migratory beekeeping begin to catch on.

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For the Californian beekeeper, the pollination season begins in February. At this time, the beehives are in particular demand by farmers who have almond groves; they need two hives an acre. For the three-week long bloom, beekeepers can hire out their hives for $32 each. It's a bonanza for the bees too. Most people consider almond honey too bitter to eat so the bees get to keep it for themselves.

By early March it is time to move the bees. It can take up to seven nights to pack the 4,000 or so hives that a beekeeper may own. These are not moved in the middle of the day because too many of the bees would end up homeless. But at night, the hives are stacked onto wooden pallets, back-to-back in sets of four, and lifted onto a truck. It is not necessary to wear gloves or a beekeeper's veil because the hives are not being opened and the bees should remain relatively quiet. Just in case some are still lively, bees can be pacified with a few puffs of smoke blown into each hive's narrow entrance.

In their new location, the beekeeper will pay the farmer to allow his bees to feed in such places as orange groves. The honey produced here is fragrant and sweet and can be sold by the beekeepers. To encourage the bees to produce as much honey as possible during this period, the beekeepers open the hives and stack extra boxes called supers on top. These temporary hive extensions contain frames of empty comb for the bees to fill with honey. In the brood chamber below, the bees will stash honey to eat later. To prevent the queen from crawling up to the top and laying eggs, a screen can be inserted between the brood chamber and the supers. Three weeks later the honey can be gathered.

Foul smelling chemicals are often used to irritate the bees and drive them down into the hive's bottom boxes, leaving the honey- filled supers more or less bee free. These can then be pulled off the hive. They are heavy with honey and may weigh up to 90 pounds each. The supers are taken to a warehouse. In the extracting room, the frames are lilted out and lowered into an "uncapper" where rotating blades shave away the wax that covers each cell. The uncapped frames are put in a carousel that sits on the bottom of a large stainless steel drum. The carousel is filled to capacity with 72 frames. A switch is flipped and the frames begin to whirl at 300 revolutions per minute; centrifugal force throws the honey out of the combs. Finally the honey is poured into barrels for shipment.

After this, approximately a quarter of the hives weakened by disease, mites, or an ageing or dead queen, will have to be replaced. To create new colonies, a healthy double hive, teeming with bees, can be separated into two boxes. One half will hold the queen and a young, already

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mated queen can be put in the other half, to make two hives from one. By the time the flowers bloom, the new queens will be laying eggs, filling each hive with young worker bees. The beekeeper's family will then migrate with them to their summer location.

Adapted from "America's Beekeepers: Hives for Hire" by Alan Mairson, National Geographic.

Questions 1-7: ***Complete the flow chart with the words and phrases in the table.***

BEEKEEPER MOVEMENTS

Example

In February, Californian farmers hire bees to help Answer: ***polinate*** almond trees.

↓

In March, beekeepers **1** _____ for migration at night when the hives are **2** _____ and the bees are generally tranquil. A little 3 _____ can ensure that this is the case.

↓

They transport their hives to orange groves where farmers **4** _____ beekeepers for placing them on their land. Here the bees make honey.

↓

After three weeks, the supers can be taken to a warehouse where 5 _____ are used to remove the wax and extract the honey from the 6 _____.

↓

After the honey collection, the old hives are rejected. Good double hives are 7 _____ and re-queened and the beekeeper transports them to their summer base.

List of Words/Phrases

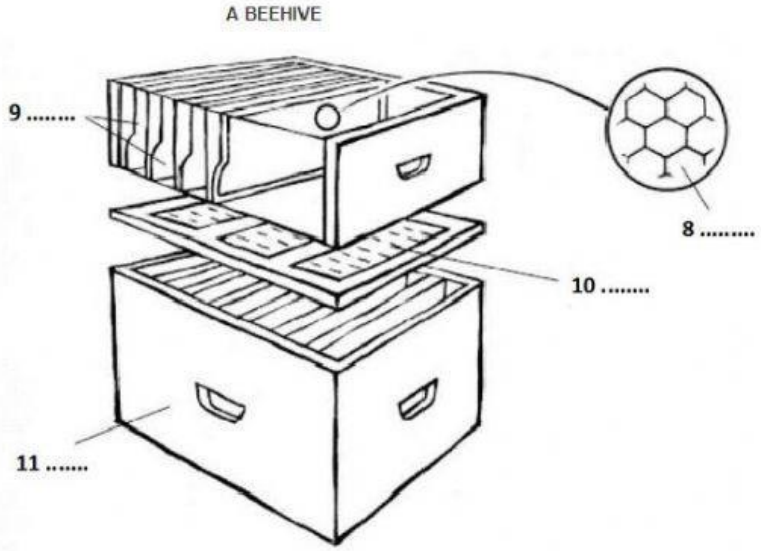
smoke	chemicals	pay
barrels	protection	charge
set off	light	split
pollinate	machines	supers
combs	screen	prepare
full	empty	queens

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Questions 8-11

Label the diagram below.

*Choose **ONE OR TWO WORDS** from the Reading Passage for each answer.*



<u>Exercise 5.</u> [IELTS Reading: Table completion- Diagram completion] Read the passage and answer the questions.

Sheet glass manufacture: The float process

Glass, which has been made since the time of the Mesopotamians and Egyptians, is little more than a mixture of sand, soda ash and lime. When heated to about 1500 degrees Celsius (°C) this becomes a molten mass that hardens when slowly cooled. The first successful method for making clear and flat glass involved spinning. This method was very effective as the glass had not touched any surfaces between being soft and becoming hard, so it stayed perfectly unblemished, with a 'fire finish'. However, the process took a long time and was labour intensive.

Nevertheless, demand for flat glass was very high and glassmakers across the world were looking for a method of making it continuously. The first continuous ribbon process involved squeezing molten glass through two hot rollers, similar to an old mangle. This allowed glass of virtually any thickness to be made non-stop, but the rollers would leave both sides of the glass

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marked, and these would then need to be ground and polished. This part of the process rubbed away around 20 per cent of the glass, and the machines were very expensive.

The float process for making flat glass was invented by Alistair Pilkington. This process allows the manufacture of clear, tinted and coated glass for buildings, and clear and tinted glass for vehicles. Pilkington had been experimenting with improving the melting process, and in 1952 he had the idea of using a bed of molten metal to form the flat glass, eliminating altogether the need for rollers within the float bath. The metal had to melt at a temperature less than the hardening point of glass (about 600°C), but could not boil at a temperature below the temperature of the molten glass (about 1500°C). The best metal for the job was tin.

The rest of the concept relied on gravity, which guaranteed that the surface of the molten metal was perfectly flat and horizontal. Consequently, when pouring molten glass onto the molten tin, the underside of the glass would also be perfectly flat. If the glass were kept hot enough, it would flow over the molten tin until the top surface was also flat, horizontal and perfectly parallel to the bottom surface. Once the glass cooled to 604°C or less it was too hard to mark and could be transported out of the cooling zone by rollers. The glass settled to a thickness of six millimetres because of surface tension interactions between the glass and the tin. By fortunate coincidence, 60 per cent of the flat glass market at that time was for six millimetre glass.

Pilkington built a pilot plant in 1953 and by 1955 he had convinced his company to build a full-scale plant. However, it took 14 months of non-stop production, costing the company £100,000 a month, before the plant produced any usable glass. Furthermore, once they succeeded in making marketable flat glass, the machine was turned off for a service to prepare it for years of continuous production. When it started up again it took another four months to get the process right again. They finally succeeded in 1959 and there are now float plants all over the world, with each able to produce around 1000 tons of glass every day, non-stop for around 15 years.

Float plants today make glass of near optical quality. Several processes — melting, refining, homogenising — take place simultaneously in the 2000 tonnes of molten glass in the furnace. They occur in separate zones in a complex glass flow driven by high temperatures. It adds up to a continuous melting process, lasting as long as 50 hours, that delivers glass smoothly and continuously to the float bath, and from there to a coating zone and finally a heat treatment zone, where stresses formed during cooling are relieved.

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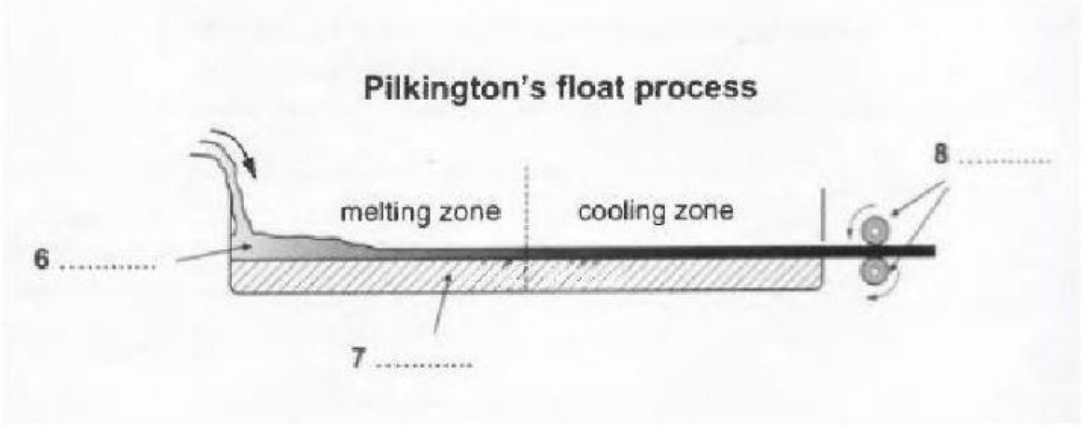
The principle of float glass is unchanged since the 1950s. However, the product has changed dramatically, from a single thickness of 6.8 mm to a range from sub-millimetre to 25 mm, from a ribbon frequently marred by inclusions and bubbles to almost optical perfection. To ensure the highest quality, inspection takes place at every stage. Occasionally, a bubble is not removed during refining, a sand grain refuses to melt, a tremor in the tin puts ripples into the glass ribbon. Automated on-line inspection does two things. Firstly, it reveals process faults upstream that can be corrected. Inspection-technology allows more than 100 million measurements a second to be made across the ribbon, locating flaws the unaided eye would be unable to see. Secondly, it enables computers downstream to steer cutters around flaws.

Float glass is sold by the square metre, and at the final stage computers translate customer requirements into patterns of cuts designed to minimise waste.

Complete the table and diagram below. Choose NO MORE THAN TWO WORDS from the passage for each answer.

Early methods of producing flat glass

Method	Advantages	Disadvantages
1_____	• Glass remained 2_____	• Slow • 3_____
Ribbon	• Could produce glass sheets of varying 4_____ • Non-stop process	• Glass was 5_____ • 20% of glass rubbed away • Machines were expensive



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