

# Pearson Edexcel GCE

## Applied Information and Communication Technology Unit 3: The Knowledge Worker

May 2015

**Scenario**

Paper Reference

**6953/01**

The scenario should be distributed to candidates at least three working weeks before the examination.

**Practice files:** Truckles\_practice.xlsx, Test data\_practice.pdf

This scenario should be used for the purposes of preparing candidates for the examination. This copy must not be taken into the examination. The information contained in the scenario will be included in the examination paper.

Further details are in the Instructions of the Conduct of Examinations (ICE), available from the Edexcel website for this qualification.

**Edexcel will not accept any request for special consideration should candidates be given the incorrect scenario for the examination they are sitting.**

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## **Warning**

At the time of writing there is no such fish as a truckle. This scenario is fictitious and should not be used in any way as guidelines for breeding tropical fish.

## **Scenario**

### **Truckles**

After nearly 40 years of teaching biology, Trevor Rose decided to take a well-earned retirement. He was aware that he would need to find something to do to keep his body and mind active. As he wasn't much of a gardener, the usual retirement pursuits were not attractive to him. Bearing in mind that there is a limit to the amount of golf a 61-year-old can play, Trevor decided to develop his other interest and breed truckles.

Truckles are small tropical fish similar to guppies. The male fish has a large, colourful fantail, which varies in colour depending on the strain. The female fish, as is often the case, is less striking than the male. Visually, there is no way of identifying the strain of a female fish, as they are all greyish-brown in colour.

Although the males are different colours they are basically the same fish and can breed, without restriction, with all female truckles. The males get their colour in a similar way to the way we get our hair colour. It is based on a combination of two genes, one from the father and one from the mother. The female truckles will have a similar combination of genes, but this will not be detectable visually.

A breeding cycle starts every four weeks in a breeding tank. The breeding tank can hold up to 32 fish. It has been found that the best results occur with 16 males and 16 females. Breeding truckles is complicated by the fact that the male truckle has a tendency to eat its own young. After four weeks, the females are removed to give birth in a separate tank called the holding tank.

After four weeks in the holding tank the adult females will have had their young and are removed and placed in the stock tank. This tank is where fish are stored. The baby truckles remain in the holding tank for another four weeks whilst they grow to maturity. At this point, they are placed in the stock tank.

Fish in the stock tank can either be placed in the breeding tank for the next cycle, split into batches for sale and placed in a selling tank or simply stored until the next cycle. From the selling tank the fish are sold to a retailer.

In order to produce truckles for sale every four weeks, Trevor needs a breeding tank, two holding tanks, a stock tank and a selling tank. He also needs filters to keep the water clean and heaters to keep the water at a temperature suitable for tropical fish.

Being thorough, Trevor contacted the Truckle Foundation, a society of truckle breeders, who have advised him on the size of the tanks and the number of filters and heaters each one requires. They have also supplied him with a spreadsheet model that uses genetic theory to calculate the number of each strain of truckle produced under given circumstances. Trevor has tried to expand the model so that it will also predict his cash flow should he go ahead with the project. Unfortunately, he did not have the skill and knowledge to complete the model.

Trevor has contacted a local tropical fish retailer called 'Fish Place' and asked for equipment prices.

Trevor will sell his surplus fish to 'Fish Place' in batches. 'Fish Place' will define the batch sizes and the price per batch. A batch will consist of a set number of a particular strain of male truckle. As there is no way of telling the strain of a female truckle, batches of female truckles are not restricted to one particular strain. Depending on fashion, some strains of male truckle are more desirable and therefore more valuable than others.

Trevor has made some notes on the spreadsheet model.

<b>Worksheet</b>	<b>Description</b>
Genetics_1,2,3 (Hidden Worksheets)	These worksheets were supplied by the Truckle Foundation as part of the original spreadsheet model. It was explained to me that 'Genetics_1' is a matrix that shows the proportions of each strain of truckle produced in the breeding process. Each union produces one of four options defined by two letters. 'Genetics_2' then converts these to a strain of truckle. To be honest I found it hard to follow so I have hidden the worksheets.
Input Page	I added this summary page. The original model allowed me to enter the number of each strain of male truckle I put in my breeding tank for each cycle ('Breeding Tank 1'). I wanted to create a summary page to input this data and also show the costs, revenue and profit for each cycle. This is so that I can see the results of my changes at a glance.
Breeding Tank 1	This worksheet was part of the original model and displays the number of each strain of truckle in the tank during each cycle. Initially this was the 'Input Page'.
Holding Tank 1a	This worksheet was also part of the original model. It shows the number of each strain of truckle in this tank at any one time. As the baby fish stay in this tank for eight weeks, we need two of this type of tank and we alternate their use.
Holding Tank 1b	Part of the original model, shows similar information to 'Holding Tank 1a'.

Stock Tank (Pre)	This worksheet was also part of the original model and shows the number of each strain of truckle in the stock tank prior to removing the truckles wanted for the breeding tank. I have had to modify this slightly as I have added the 'Selling Tank' and 'Stock Tank (Post2)' worksheets.
Stock Tank (Post1)	This worksheet was also part of the original model and shows the number of each strain of truckle in the stock tank after removing the truckles wanted for the breeding tank.
Selling Tank	I have added this worksheet and will show the number of each strain I remove to be sold.
Stock Tank (Post2)	This worksheet is new and will show the number of each strain of truckle in the stock tank after removing the truckles to be sold.
Buy	This is also a new worksheet. To start breeding I will have to have one set of male truckles and two sets of female truckles. As I will not require the second set of female truckles until after the first four weeks I have set up this worksheet to represent this.
Prices	Another new worksheet. This is where I will put the cost of all my requirements in this process. It will also contain the batch sizes of each strain of truckle and the price I will be paid per batch.
Revenue Costs	In this worksheet I will calculate the costs and projected revenue for the project over a period of time. A summary of this information appears on the 'Input Page' worksheet.

**Some cells in the model are password protected. Should you wish to experiment with the model, the password is *edexcel*. Be aware that if you change the contents of any protected cell the model may not work.**