

1. Answers will vary, summary:

- Trish could purchase at least 15 batteries.
The cost is between 0 and \$1 which means she can purchase 'more batteries than she has dollars'.
- The lower the price, the more batteries she can purchase.
- Example: If batteries cost \$0.50 then she could purchase 30 batteries.

2. • The minimum number of pencils is 40 since $20 \div 0.5 = 40$.
- The cost is between 0 and \$0.50 which means she can purchase at least 'twice as many pencils than she has dollars'.
 - The lower the price, the more pencils she can purchase.

3. • Alex will be able to purchase more shares since the price has gone down.
- Alex would be able to own more shares than he has dollars since the price of each share is now between 0 and \$1.00.
 - The lower the share price the more he will be able to purchase.

Note: This question is designed to help students understand the smaller the divisor the larger the quotient. The point at which the quotient becomes larger than the dividend is when the divisor is equal to 1.

4. • Option (a) and (b) both allow Mitchell to purchase more chocolates than he has dollars.
The price of these chocolates is between 0 and \$1.00 therefore he is able to purchase more chocolates than dollars.

5. • Each paver must be less than 1 metre in length (width).

Note: Some students may establish elaborate reasoning such as she needs to cut some of them or she needs to allow for corners. Whilst these answers are acceptable, the intent of the question, and context of the question is to consider division by quantities between 0 and 1.

Assessment Task Solutions 1

TI-30XB MultiView™: Divide & Conquer

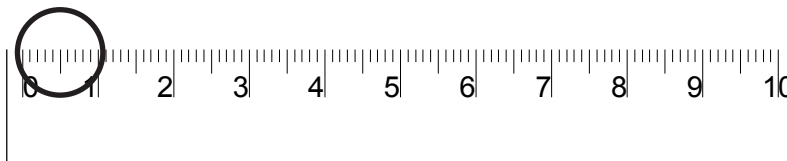
ATS1

6. Answers will vary:

- Student answers must be greater than 20.
- Students should show some sample results such as: $20 \div 0.2 = 100$
- "When you divide by a number between 0 and 1 your answer is bigger than the original quantity."
OR
"When the divisor is between 0 and 1 the quotient is larger than the dividend."

7. • (e) – The largest result will be produced from the smallest divisor. $x = 0.02$

8. • Students should place a mark between 0 and 1 if the wood is to be cut into more than 10 equally sized pieces. There is an implicit suggestion that there will be no off-cut, however the diagram is not sufficiently scaled for such accuracy, nor is the intention of the question for students to go to such 'lengths'.



Assessment Task Solutions 2

TI-30XB MultiView™: Divide & Conquer

ATS2

1.

$$432 \div 0.1 =$$

2.

$$234 \times 0.1 =$$

3.

$$410 \times 3.2 =$$

Note: This final question requires further understanding of place value.
It should also be noted that 41.0×32 and 4.1×320 also produce the same result.

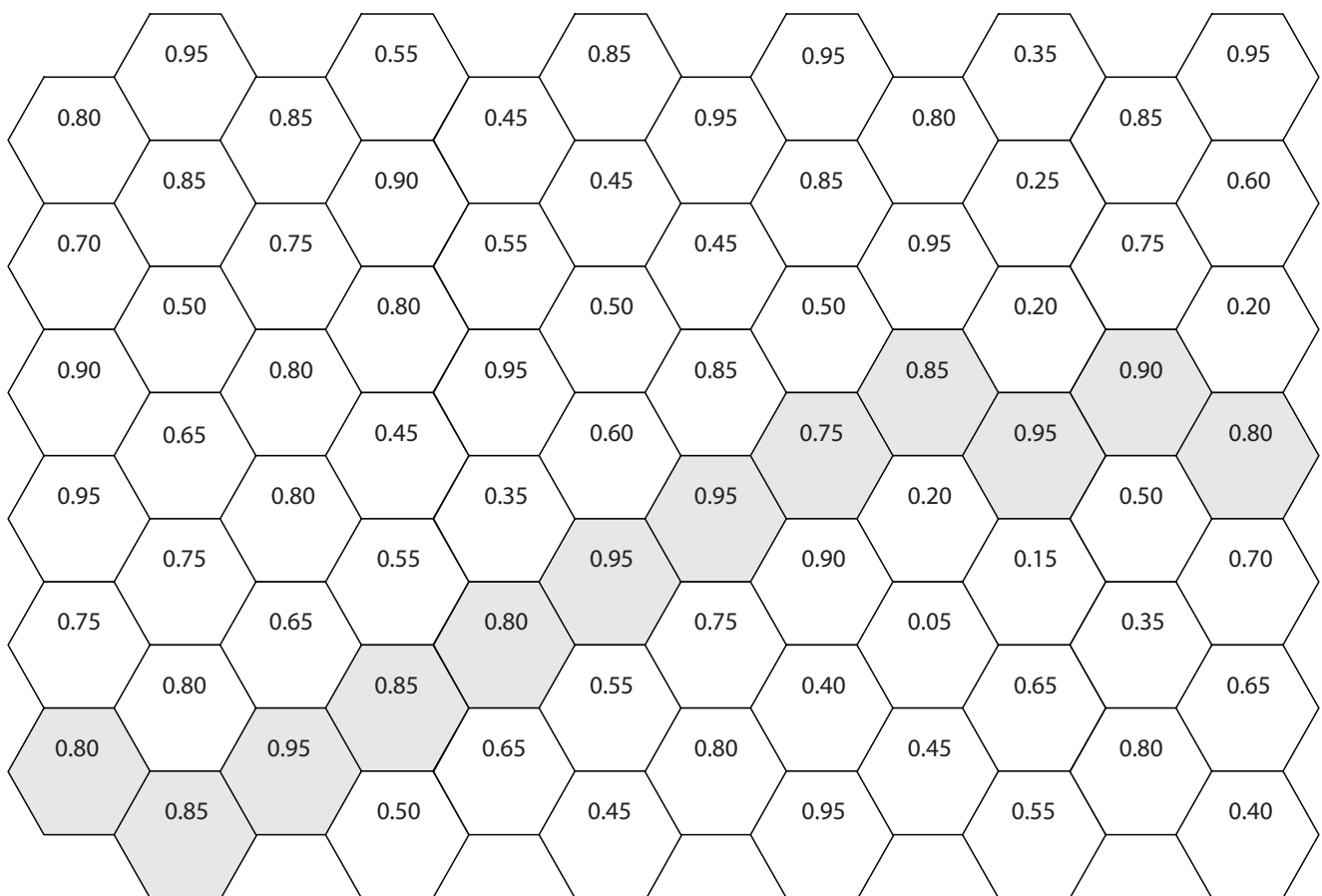
Worksheet Solutions 1

TI-30XB MultiView™ : Divide & Conquer

WS1

The aim is for students to see that multiplying by a number between 0 and 1 reduces the size of the original number. Furthermore, students recognise that 0.95 changes the number by very little while 0.55 reduces the number by quite a lot!

The optimum path does not start with the largest number on the left hand side. The optimum path is shown below. Starting with 100pts, the path concludes with a score of: 17.29 points.



Sample Questions (Class Discussion)

Looking for student strategies:

Teacher: What strategies did you find useful?

Student: "I tried to pick numbers really close to one."

Teacher: "Which numbers in the puzzle are really close to one?"

Student: ... answer will vary.

Teacher: "Why do we need to pick numbers close to one?"

Student: "The closer the number is to zero the smaller your number gets."

Teachers would need to clarify this last response to make it clear that this refers to numbers between 0 and 1. Consider for example the number 2, this is close to 0, when compared with say 100; but multiplying by 2 would make the score move further away from 0, not closer. It is REALLY important that the students understand the effect of multiplying numbers between 0 and 1.

Challenging question:

Teacher: Suppose you were allowed to travel in any direction. Would you be able to obtain a better score? (Assume you can only visit each square once).

Student: "No, because further multiplication would result in smaller numbers."

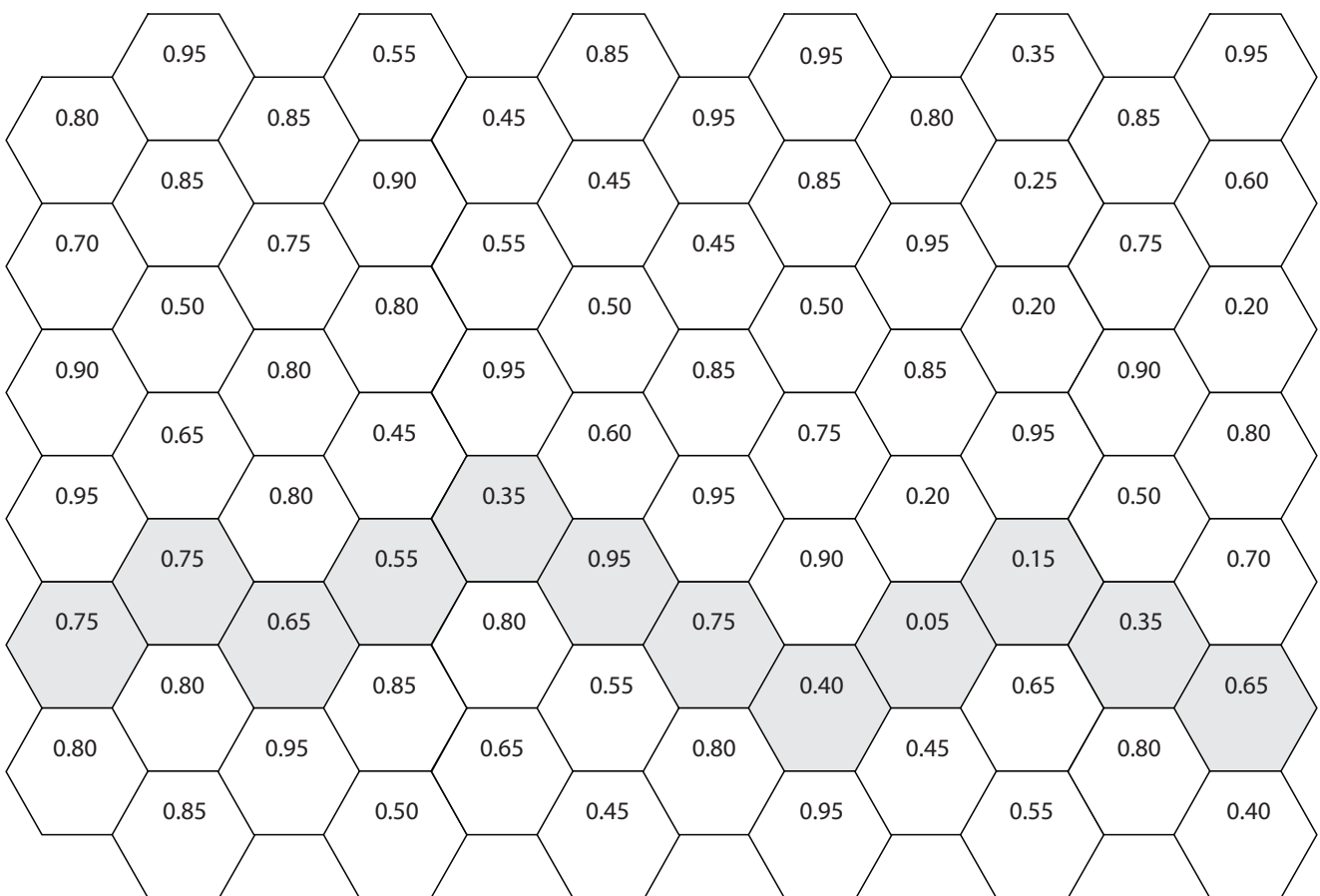
Worksheet Solutions 2

TI-30XB MultiView™: Divide & Conquer

WS2

The aim is for students to see that dividing a number by another number between 0 and 1 increases the size of the original number. Furthermore, students recognise that 0.95 increases the number by very little while 0.55 increases the number by quite a lot!

The optimum path does not start with the largest number on the left hand side. The optimum path is shown below. Starting with 100pts, the path concludes with a score of: 17.29 points.



Sample Questions (Class Discussion)

Looking for student strategies:

Teacher: What strategies did you find useful?

Student: "I tried to pick numbers really close to zero."

Teacher: "Which numbers in the puzzle are really close to zero?"

Student: ... answer will vary.

Teacher: "Why do we need to pick numbers close to zero?"

Student: "When you divide by a number close to zero the result gets larger."

Teachers would need to clarify this last response to make it clear that this refers to numbers between 0 and 1.

Challenging question:

Teacher: Suppose you were allowed to travel in any direction. Would you be able to obtain a better score? (Assume you can only visit each square once).

Student: "Yes, because further division would result in larger numbers. I would travel across every square on the board."