Malati Fractions

These activities were adapted from Hanlie Murray's work with Malati: Mathematics Learning and Teaching Initiative, http://academic.sun.ac.za/mathed/Malati/Fractionsd.htm

1. Lisa Shares Chocolate Bars

1. Lisa and Mary have 7 bars of chocolate that they want to share equally between the two of them so that nothing is left. Help them to do it.

2. Lisa, Mary and Ben have 7 bars of chocolate that they want to share equally among the three of them so that nothing is left. Help them to do it.

3. Lisa, Mary, Ben and Peter have 13 bars of chocolate that they want to share equally among the four of them so that nothing is left. Help them to do it.

2. Equal Sharing

1. Five friends want to share 11 chocolate bars equally. How must they do it?

2. Five friends want to share 21 chocolate bars equally. How must they do it?

3. Giving Names

When we divide something into 2 equal parts, we call these parts halves.

When we divide something into 3 equal parts, we call these parts thirds.

When we divide something into 4 equal parts, we call these parts fourths or quarters.

When we divide something into 5 equal parts, we call these fifths.

1. What would you rather have, a third of a chocolate bar or a fifth of a chocolate bar? Why?

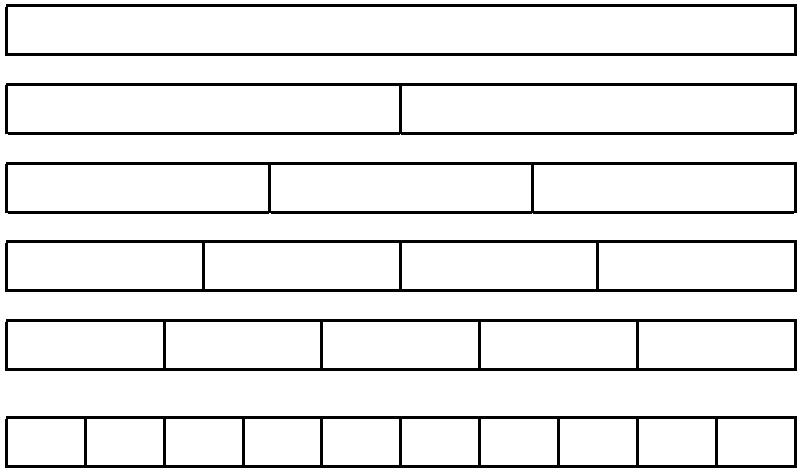
2. What would you rather have, a third of a $1 or a fourth of $1? Why?

3. How many cents is a half of $1? A fourth of $1?

What would you rather have, a half of $1 or two fourths of $1? Why?

4. Putting Pieces Together

Look at these big chocolate bars. They have all been cut into different equal pieces.
Give the pieces names (halves or thirds or whatever you think).



5. Fair Sharing

1. Six friends want to share 7 chocolate bars equally. How must they do it?

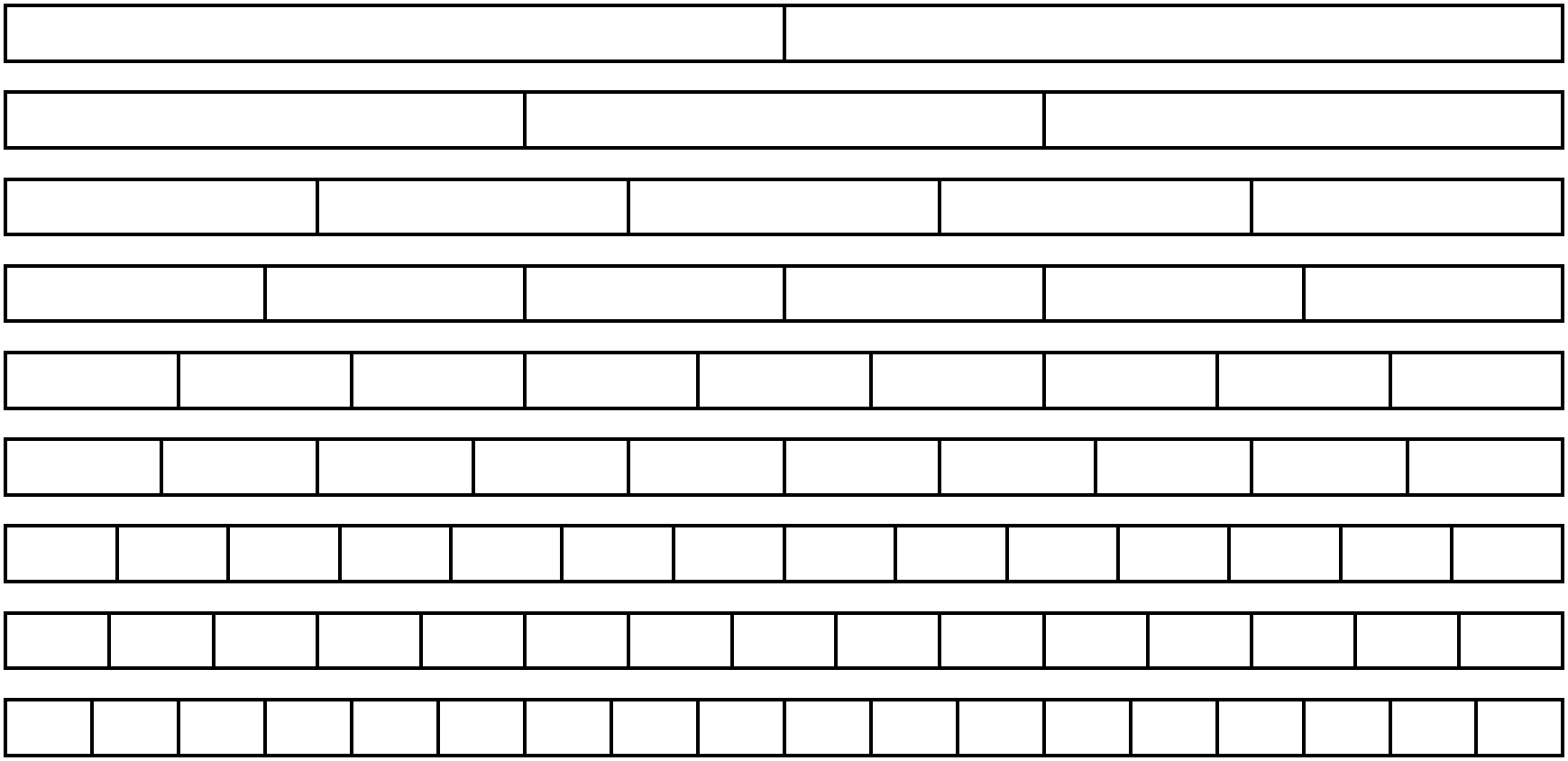
2. Six friends want to share 8 chocolate bars equally. How must they do it?

3. A chocolate bar is cut into two equal pieces. What do you call each piece?

4. A chocolate bar is cut into 7 equal pieces. What do you call each piece?

6. Making Bigger Pieces

Look at these chocolate bars that have been cut in different ways:



1. How many sixths of a chocolate bar must you put together to make a third of a chocolate bar?

   How may sixths to make two thirds?

   How many tenths to make a fifth?

   How many tenths to make a half?

   How many ninths to make two thirds?

2. Write down all the bigger pieces you can make from ninths, fifteenths, or eighteenths?

7. Food for the Tag Team

A short way to write a half is $\frac{1}{2}$.

A short way to write a seventh is $\frac{1}{7}$.

A short way to write a twentieth is $\frac{1}{20}$.

1. Two tag teams play a game. There are 14 children all together. The coach wants to give each child $\frac{1}{2}$ of an orange. How many oranges does she need?

2. One of the parents brings a bag with 35 chocolate bars to share among the 14 players. How much chocolate bar does each player get?

8. Name and Share (Assessment)

1. A chocolate bar is cut into 9 equal pieces. What do you call each piece?

2. A chocolate bar is cut into 5 equal pieces. What do you call each piece?

3. Three friends want to share 7 bars of chocolate equally between them. How much chocolate does each friend get? Draw a picture to show how you got your answer.

4. Three friends want to share 8 bars of chocolate equally between them. How much chocolate does each friend get? Draw a picture to show how your answer.

9. Cake for the Tagball Game

Mrs Jones bakes five cakes for the party after the game.

For one cake she needs:

$\frac{1}{4}$ cup margarine

$\frac{1}{2}$ cup sugar

1 egg

$\frac{1}{2}$ cup milk

$1\frac{1}{2}$ cups flour

$2\frac{1}{2}$ teaspoons baking powder

$\frac{1}{4}$ teaspoon salt

$\frac{1}{2}$ teaspoon vanilla

Work out how much she needs for five cakes.

10. Preparing Oatmeal

Peter and Anna prepare oatmeal for breakfast.

For each bowl of oatmeal, they use $\frac{2}{6}$ of a quart of milk.

1. If they make 6 bowls of oatmeal, how many quarts of milk do they need?

2. They have 5 quarts of milk. How many bowls of oatmeal can they prepare?

3. They have $1\frac{1}{2}$ quarts of milk. How many bowls of oatmeal can they prepare?

11. Wire Animals and Cars

The children are making different animals and cars from wire.

A car needs $2\frac{1}{2}$ yards of wire. They can sell a wire car for $30.

An animal needs $1\frac{1}{2}$ yards of wire. They can sell a wire animal for $20.

1. The children have 20 yards of wire.

(a) How many cars can they make from 20 yards of wire?

(b) How many animals can they make from 20 yards of wire?

2. Look at your two answers for Part 1.

Now look at the selling prices for the cars and the animals.

Help the children to decide what they must make, cars or animals, to earn the most money. Explain your thinking

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Help the children to decide what they must make, cars or animals, to earn the most money. Explain your thinking

12. Wire per Yard

The wire to make animals and cars costs six cents per yard. Complete the following table:

Length in yards	Cost in cents	Length in yards	Cost in cents
1	6	10	
$1\frac{1}{2}$		20	
2	12	30	
$2\frac{1}{2}$		40	
3	18	50	
$3\frac{1}{2}$		60	
4		70	
$4\frac{1}{2}$		80	
5		90	
$5\frac{1}{2}$		100	

Now show how to use this table to find the cost of:

$7\frac{1}{2}$ yards of wire

$11\frac{1}{2}$ yards of wire

25 yards of wire

$61\frac{1}{2}$ yards of wire

85 yards of wire

$91\frac{1}{2}$ yards of wire

13. Finding the Biggest Piece of Candy

The short way to write a fifth is $\frac{1}{5}$.

The short way to write three fifths is $\frac{3}{5}$.

Here are candy bars that have been cut:

Which would you rather have? Why?

$\frac{5}{10}$ or $\frac{2}{5}$?

$\frac{1}{3}$ or $\frac{2}{6}$?

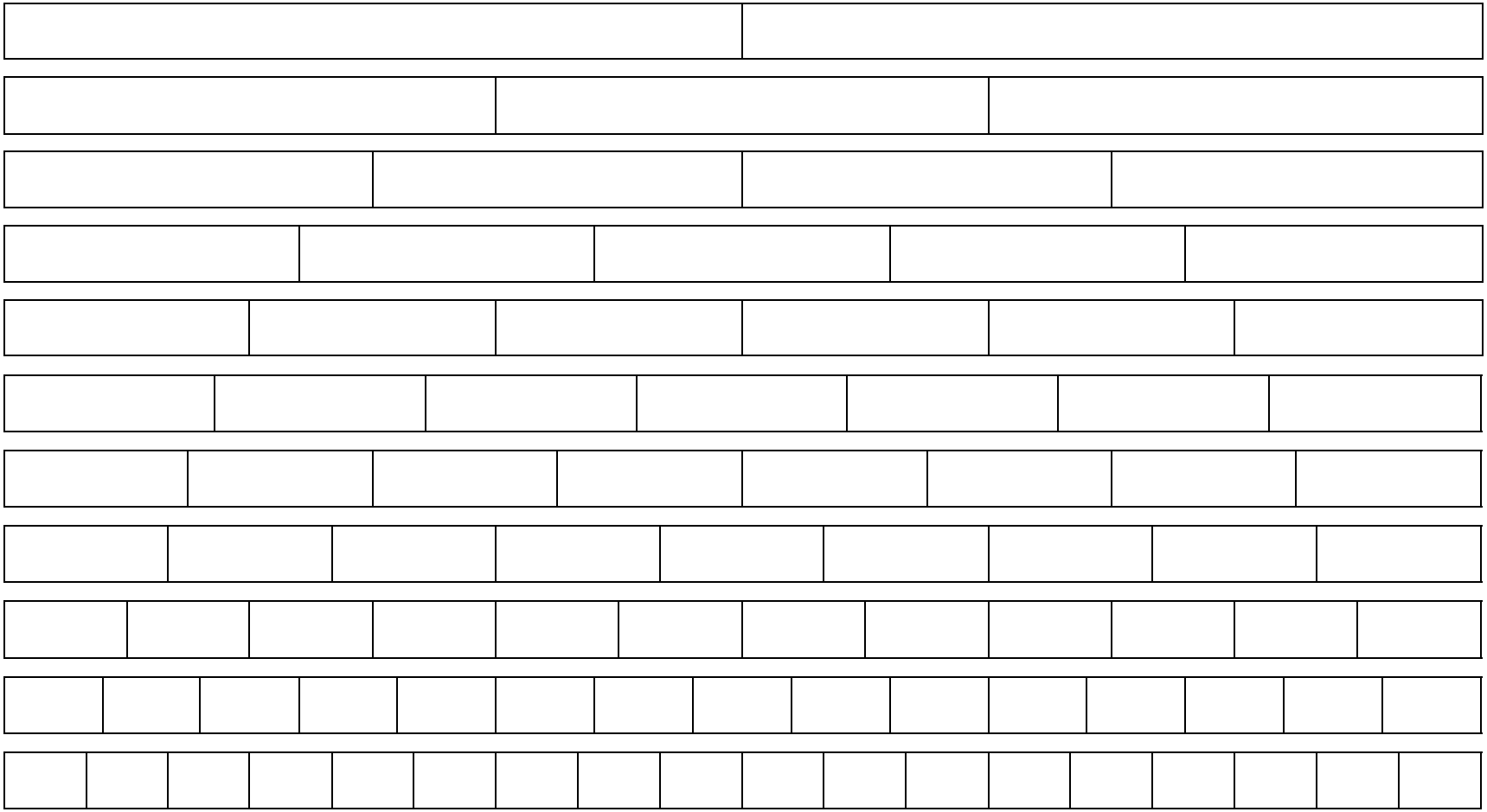
$\frac{1}{7}$ or $\frac{1}{8}$?

$\frac{1}{2}$ or $\frac{3}{5}$?

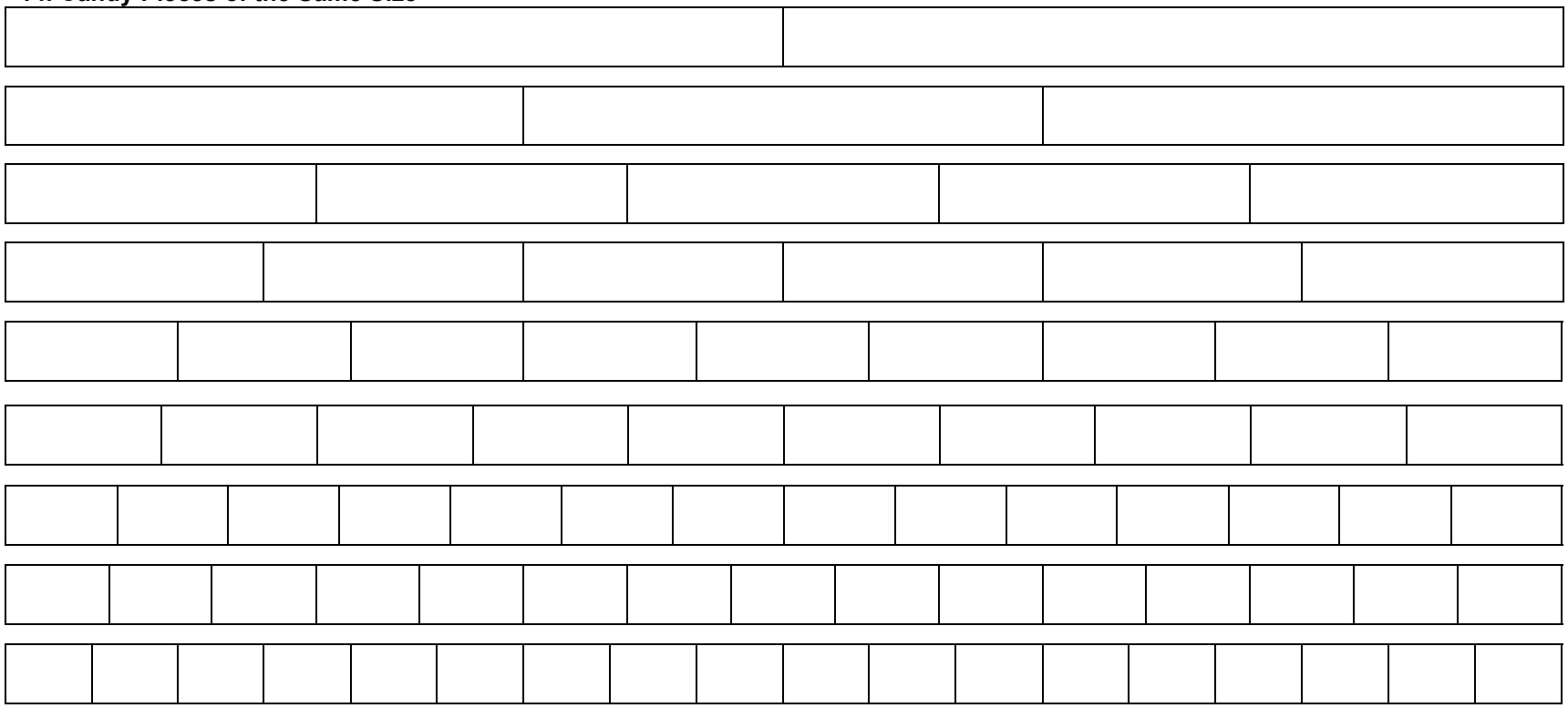
$\frac{7}{15}$ or $\frac{4}{8}$?

$\frac{2}{4}$ or $\frac{3}{6}$?

$\frac{9}{18}$ or $\frac{6}{10}$?



14. Candy Pieces of the Same Size



Here are some pieces of a candy bar:

$\frac{6}{18}$ $\frac{5}{10}$ $\frac{1}{3}$ $\frac{2}{4}$ $\frac{3}{6}$

$\frac{4}{12}$ $\frac{6}{12}$ $\frac{5}{15}$ $\frac{5}{6}$ $\frac{4}{5}$

$\frac{12}{18}$ $\frac{12}{15}$ $\frac{10}{12}$ $\frac{2}{3}$ $\frac{2}{6}$

1. First say which of the above pieces of candy you think are the same size. Explain your thinking.
2. Then check on the drawing if you were right.
3. Now use the drawing to find all the other pieces of the same size that you may have missed on this list.

15. Grandmother's 80th Birthday Party

There are 24 people at Grandmother's 80th birthday party.

Tim counts all the people and writes down the following puzzles. Can you solve them?

1. Half of the people at the party are related to Grandmother. How many people are related to her?

2. A quarter of the people at the party are children. How many children are there?

3. Two thirds ($\frac{2}{3}$) of the people at the party are female. How many females are there?

4. Grandmother's eldest son is $\frac{3}{4}$ of her own age. How old is he?

16. How Many People?

1. Wharton Elementary school is arranging a field trip.
They can only get one bus, so only one fifth ($\frac{1}{5}$) of the people in each class can go on the field trip.

(a) There are 35 people in Robert's class. How many people from his class will go on the field trip?

(b) There are 55 people in Zach's class. How many people from his class will go on the field trip?

(c) There are 49 people in Warren's class. How many people from his class will go on the field trip?

2. The school finds another bus. Now $\frac{2}{5}$ of each class can go on the field trip.
(a) How many people from Robert's class will go on the field trip?

(b) How many people from Zach's class will go on the field trip?

(c) How many people from Warren's class will go on the field trip?

3. Do you think this is a fair way of choosing people to go on the field trip? Why?

17. Wire Ducks and Ribbon

1. The children make a small duck from $\frac{1}{3}$ of a yard of thin wire.

They have $5\frac{1}{2}$ yards of thin wire. How many small ducks can they make?

2. The children use $\frac{1}{4}$ yard of ribbon to wrap and decorate one gift.

If each child is given $2\frac{1}{2}$ yards of ribbon, how many gifts can each child wrap and decorate?

18. Planting Stakes

David needs some stakes to put labels on his vegetable seedbeds.

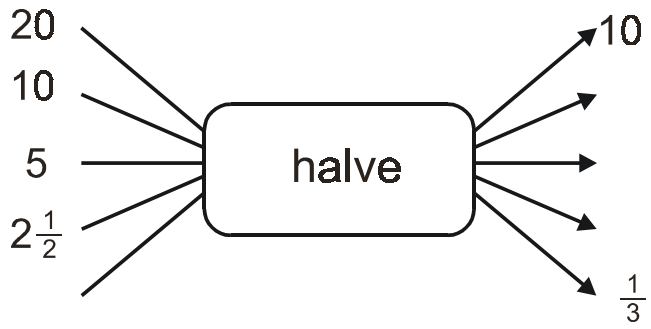
He needs stakes that are $\frac{1}{5}$ yard long.

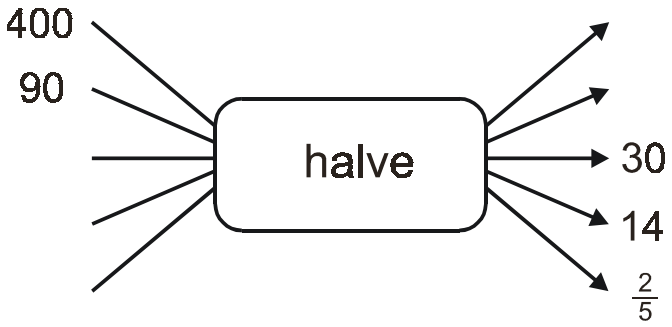
He has a $1\frac{1}{2}$ yard length of wooden rod.

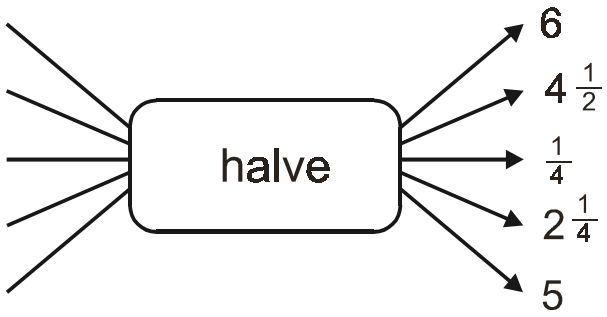
How many stakes of $\frac{1}{5}$ yard in length can he cut from this rod?

19. Spiders

Complete these flow diagrams:







20. Birthday Cake

1. Lisa uses the juice of $1\frac{1}{2}$ oranges for a large birthday cake.

   She has 8 oranges. How many cakes can she bake?

2. Ben and Mary have $1\frac{1}{2}$ bars of chocolate.

   They want to share the chocolate equally.

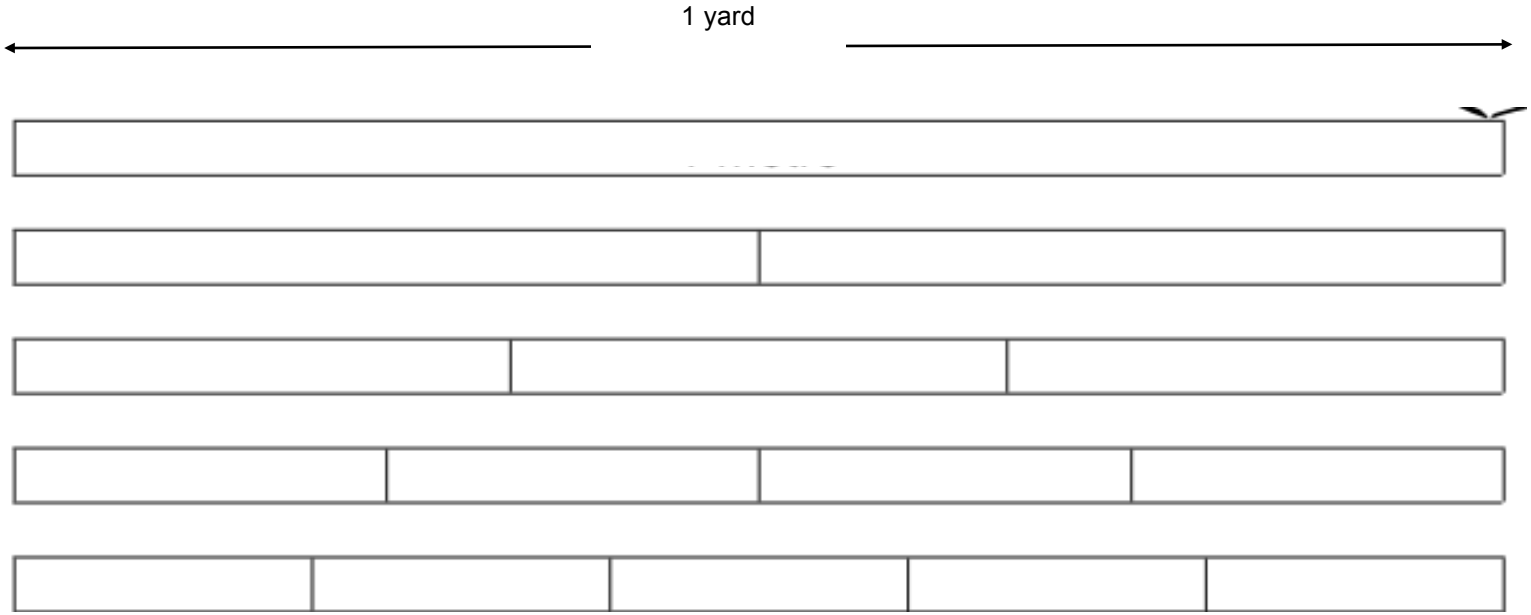
   How much chocolate must each child get?

21. Money Magic
See how far you can get with this table. You can do the easy ones first if you prefer.

a half of $1	an eighth of $1
a third of $1	a ninth of $1
a fourth of $1	a tenth of $1
a fifth of $1	a twentieth of $1
a sixth of $1	a fiftieth of $1
a seventh of $1	a hundredth of $1

22. Ribbons (Assessment)

1) You have some 1 yard strips of ribbon, cut into different sized pieces:
Name each of the pieces



2) Which piece of ribbon is the longest?

(a) $\frac{1}{2}$ yard or $\frac{1}{4}$ yard

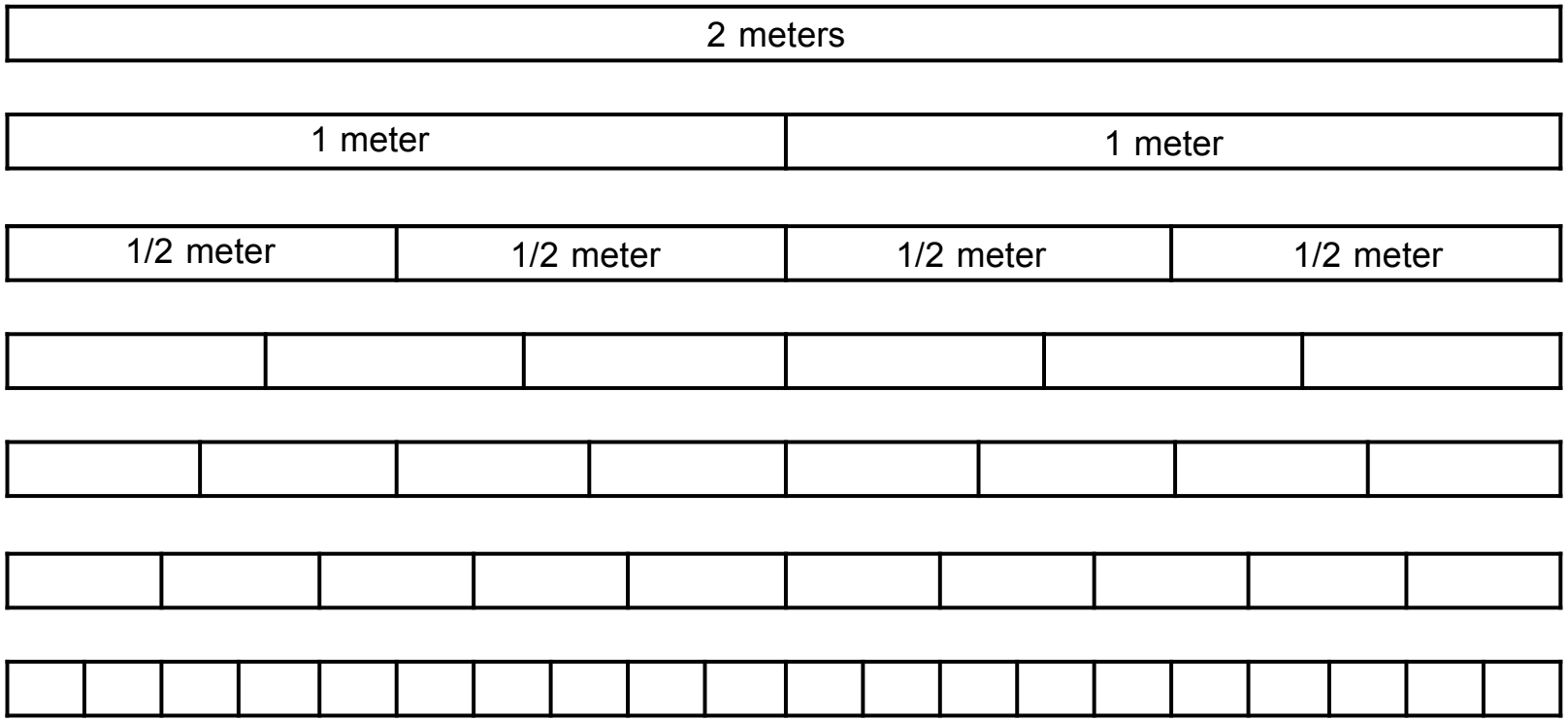
(b) $\frac{1}{2}$ yard or $\frac{2}{4}$ yard

(c) $\frac{1}{3}$ yard or $\frac{1}{5}$ yard

(d) $\frac{1}{2}$ yard or $\frac{3}{5}$ yard

23. Ribbons Again (Assessment)

1) You have some 2-meter ribbon strips cut up into different sized pieces:
Name all the pieces.



2) Which piece is the longest?

(a) $\frac{1}{2}$ meter or $\frac{1}{10}$ meter

(b) $\frac{1}{5}$ meter or $\frac{5}{10}$ meter

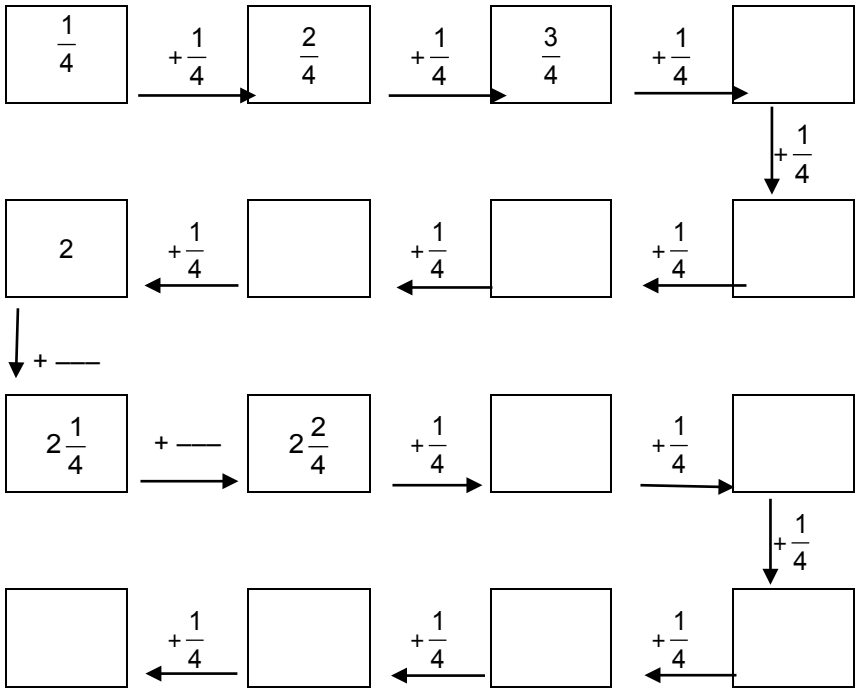
(c) $1\frac{1}{5}$ meter or $\frac{6}{5}$ meter

(d) $\frac{5}{10}$ meter or $\frac{2}{4}$ meter

(e) 1 meter or $\frac{3}{3}$ meter

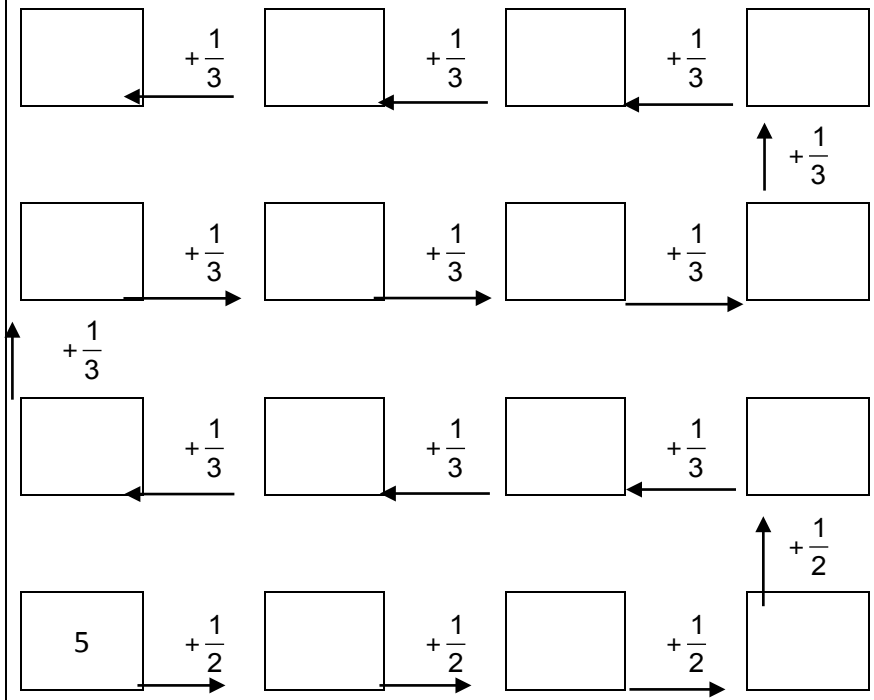
24. Rattlesnake

Complete this chain:



25. Egyptian Snake

Complete this chain:



26. Leftovers

Lisa wants to know what she has left over after a party.

How much of each does she have of each altogether?

3 big packets of chips, each $\frac{1}{2}$ full

5 containers of ice cream, each $\frac{1}{4}$ full

2 jugs of milk, each $\frac{2}{3}$ full

27. Reading

1. John's book has 88 pages. He says: "I have read more than half of the book. I am on page 41."

   Is it true? Explain.

2. Mary has 27 candies. She gives 10 candies to Peter. She says: "Peter, I have given you a third of my candies."

   Is it true? Explain.

28. Peaches for the School

1. Farmer Sam promises to give a tenth of his peaches to the school. He has 90 trays of peaches. How many trays must he give to the school?

2. Shelly gives $\frac{1}{3}$ of a box of chips to Daniel's class. If there are 90 packets in a box, how many packets of chips does the class get?

29. Giving to the School (Assessment)

A rich farmer decides to donate the following to the local school:

- $\frac{1}{3}$ of his boxes of apples
- $\frac{2}{3}$ of his boxes of oranges
- $\frac{1}{4}$ of his corn

1. On a certain day, the farmer produces 48 boxes of apples, 75 boxes of oranges and 120 tons of corn.
   How much of each of these foodstuffs does the school receive on this day?

2. The school writes a letter to the farmer asking him for more apples. They suggest that he considers donating $\frac{1}{5}$ instead of $\frac{1}{3}$ of his bags of apples. What should he reply?

30. Sharing Food

The children have brought different things to eat and drink.

1. They have three chocolate bars to share equally among four children. How much chocolate does each child get?

2. They have two quarts of juice to share equally among eight children. How much juice must each child get?

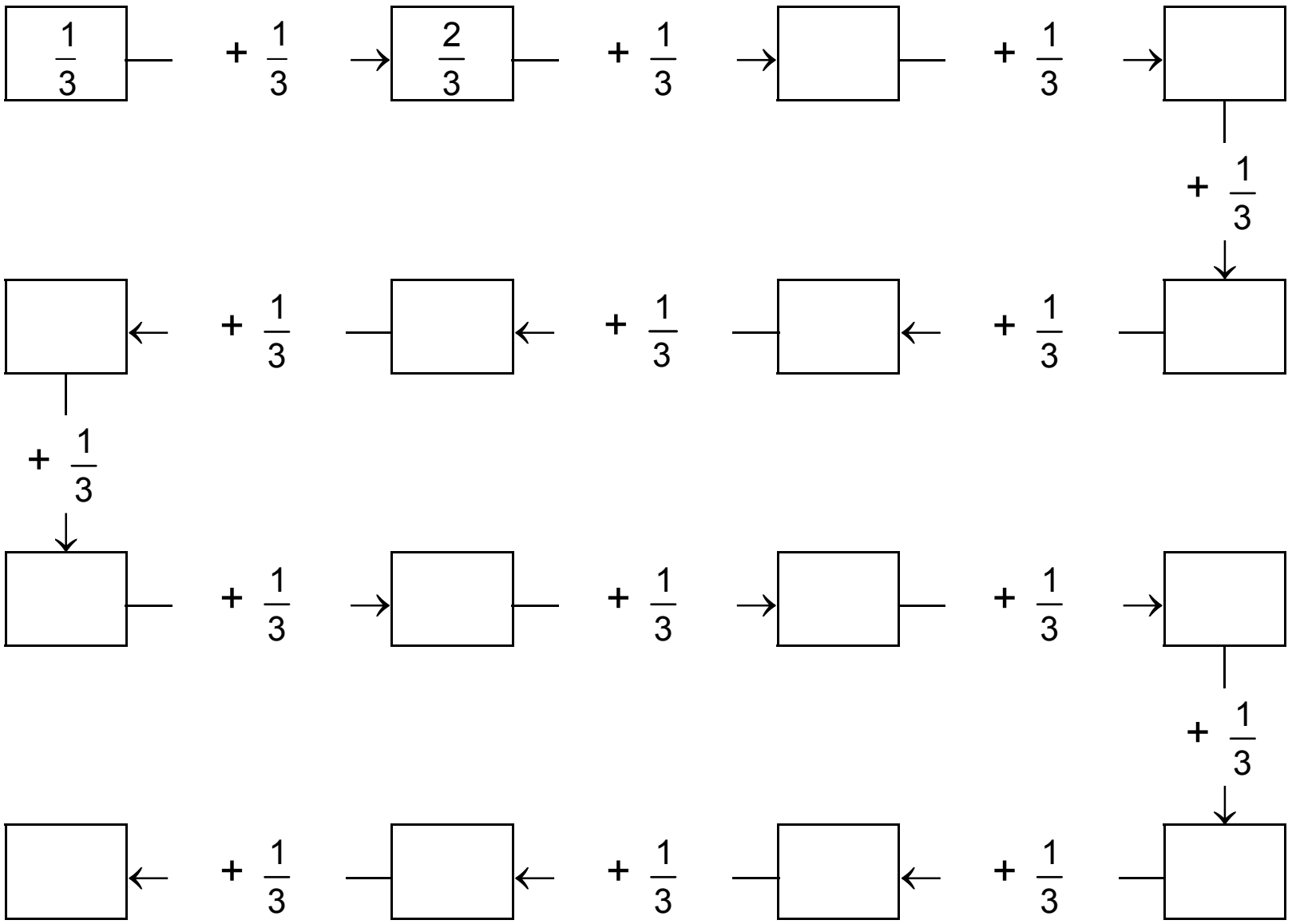
3. They have nine oranges to share equally among four children. How much orange must each child get?

31. Gifts of Jerky

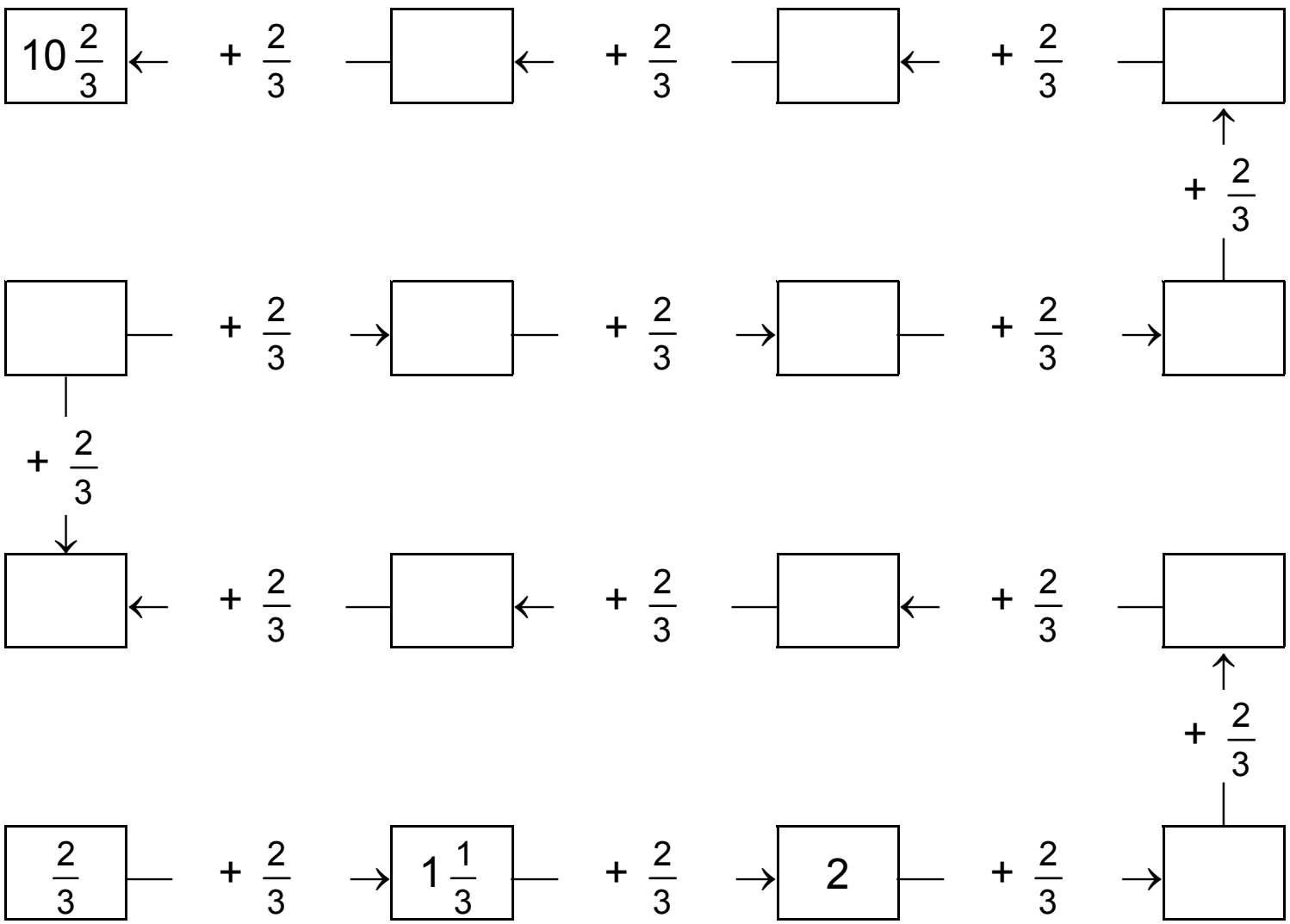
1. Karl and Denise were both given jerky during the holidays. Karl ate a quarter of his, while Denise ate half of hers.
   Who ate the most jerky?

2. Karl's brother Shaun was also given some jerky. Shaun is much younger than Karl, so for every strip of jerky Shaun was given, Karl was given three. How many strips of jerky did Karl get if Shaun got 7?

32. Chains
Complete this chain:



33. Egyptian Snake



34. Minutes in Hours

Complete this table:

Number of Hours	Number of Minutes
$\frac{1}{6}$	10
$\frac{1}{5}$	
$\frac{1}{3}$	
$\frac{1}{4}$	
$\frac{1}{2}$	
1	60
	120
$1+\frac{1}{2}$	
$1+\frac{1}{3}$	
$1+\frac{1}{4}+\frac{1}{4}$	
$\frac{1}{6}+\frac{1}{6}$	
$\frac{1}{3}+\frac{1}{6}$	

Do you notice anything?

35. Miles in Minutes

It takes Susan 10 minutes to walk one mile.
Complete this table:

Number of Miles	Number of Minutes
1	10
$\frac{1}{2}$	
$\frac{1}{5}$	
2	
$2\frac{1}{2}$	
$1\frac{1}{2}$	
$1\frac{1}{5}$	
3	30
$3\frac{1}{2}$	
$\frac{1}{2}+\frac{1}{5}$	
$1\frac{1}{2}+\frac{1}{5}$	
$1\frac{1}{5}+\frac{1}{2}$	

36. Hours in Days

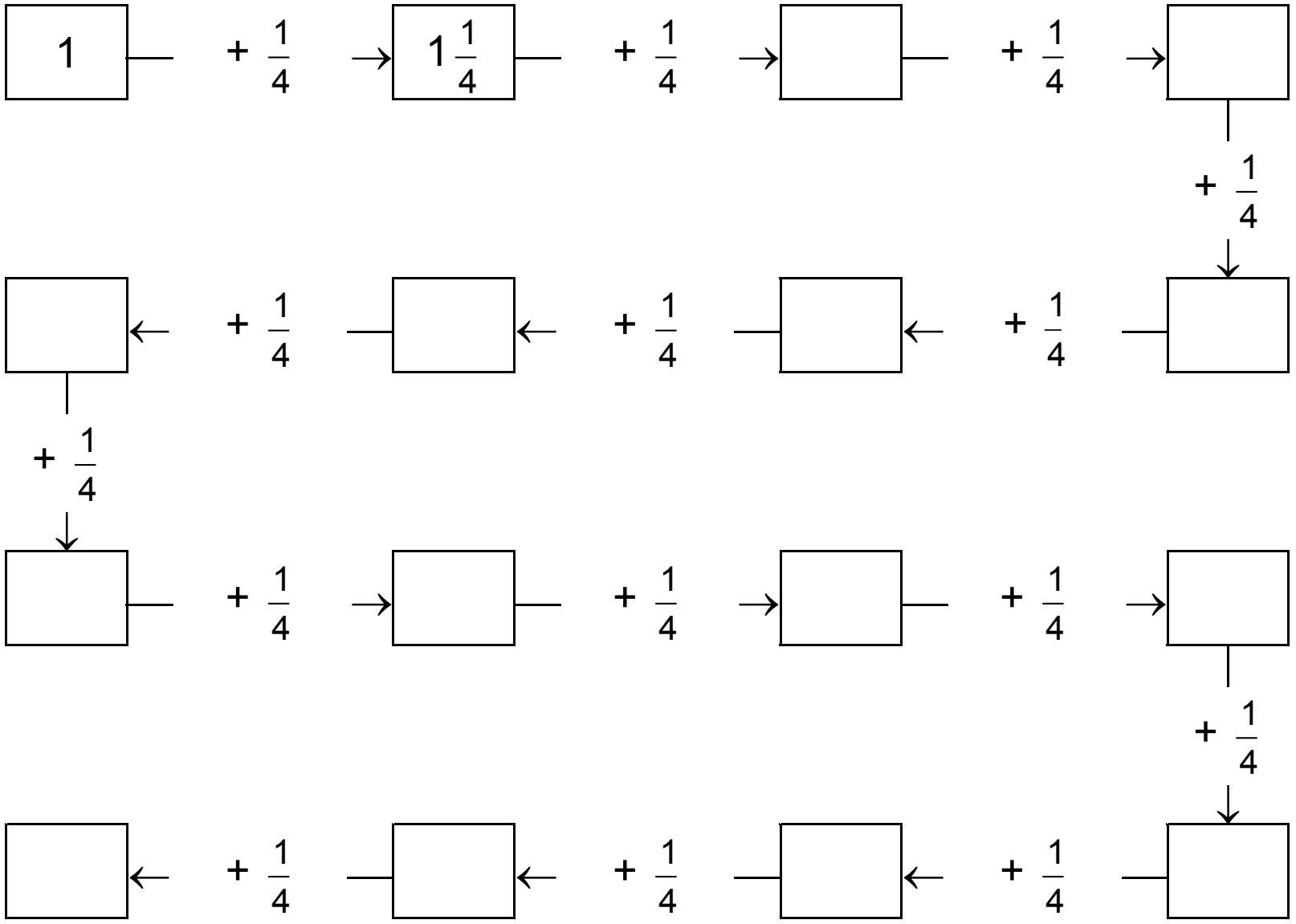
There are 24 hours in a day.

Complete this table:

Number of Days	Number of Hours	Number of Days	Number of Hours
1	24	$\frac{1}{6}+\frac{1}{6}$	
2		$\frac{1}{3}+\frac{1}{3}$	
$\frac{1}{2}$		$\frac{1}{2}+\frac{1}{6}$	
$\frac{1}{4}$		$\frac{1}{2}+\frac{1}{4}$	
$\frac{1}{3}$		$2\frac{1}{2}$	
$\frac{1}{6}$	4	5	
$\frac{1}{4}+\frac{1}{4}$	12	6	

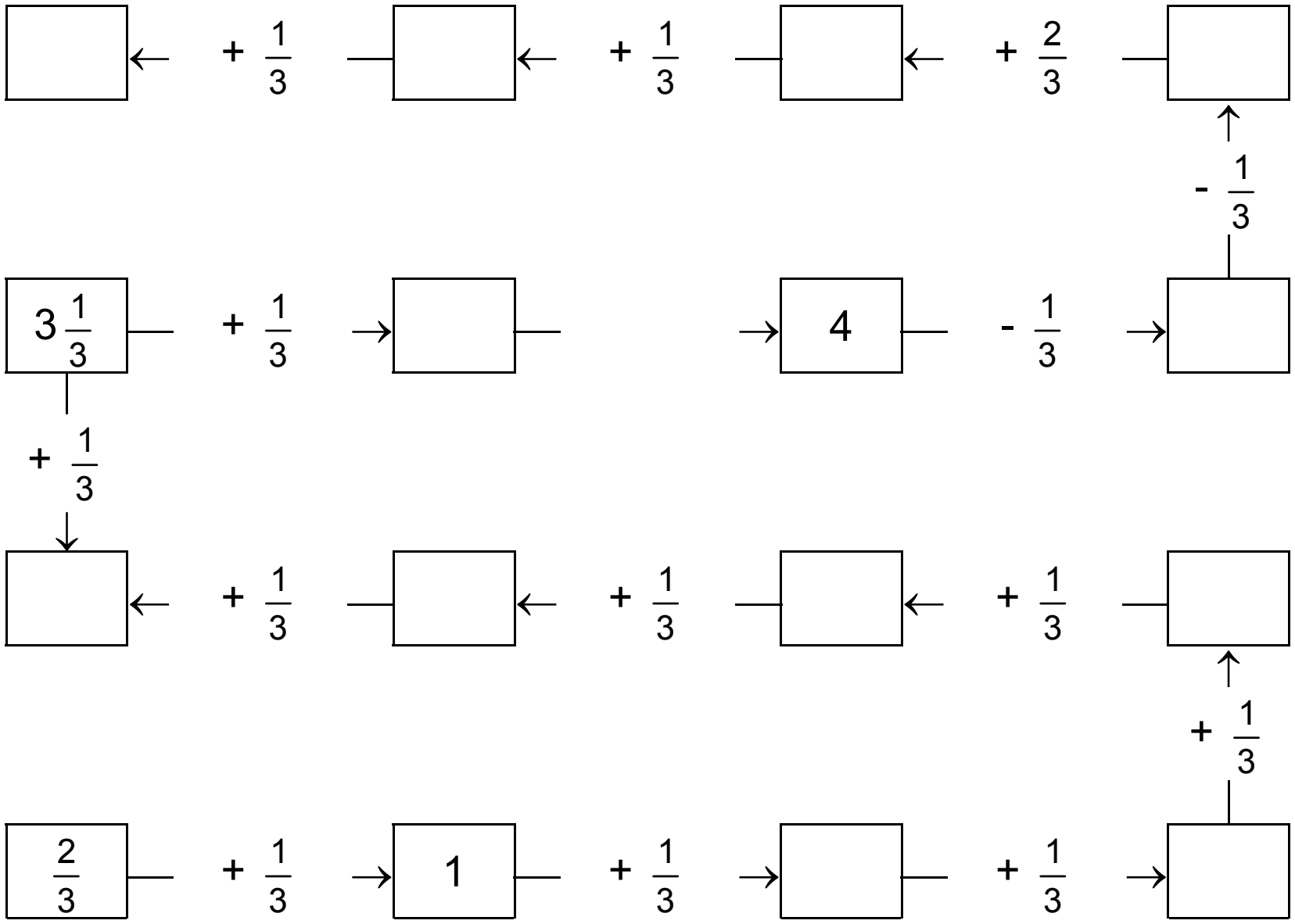
37. Indian Snake

Complete this chain:

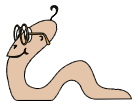


38. Rattlesnake II

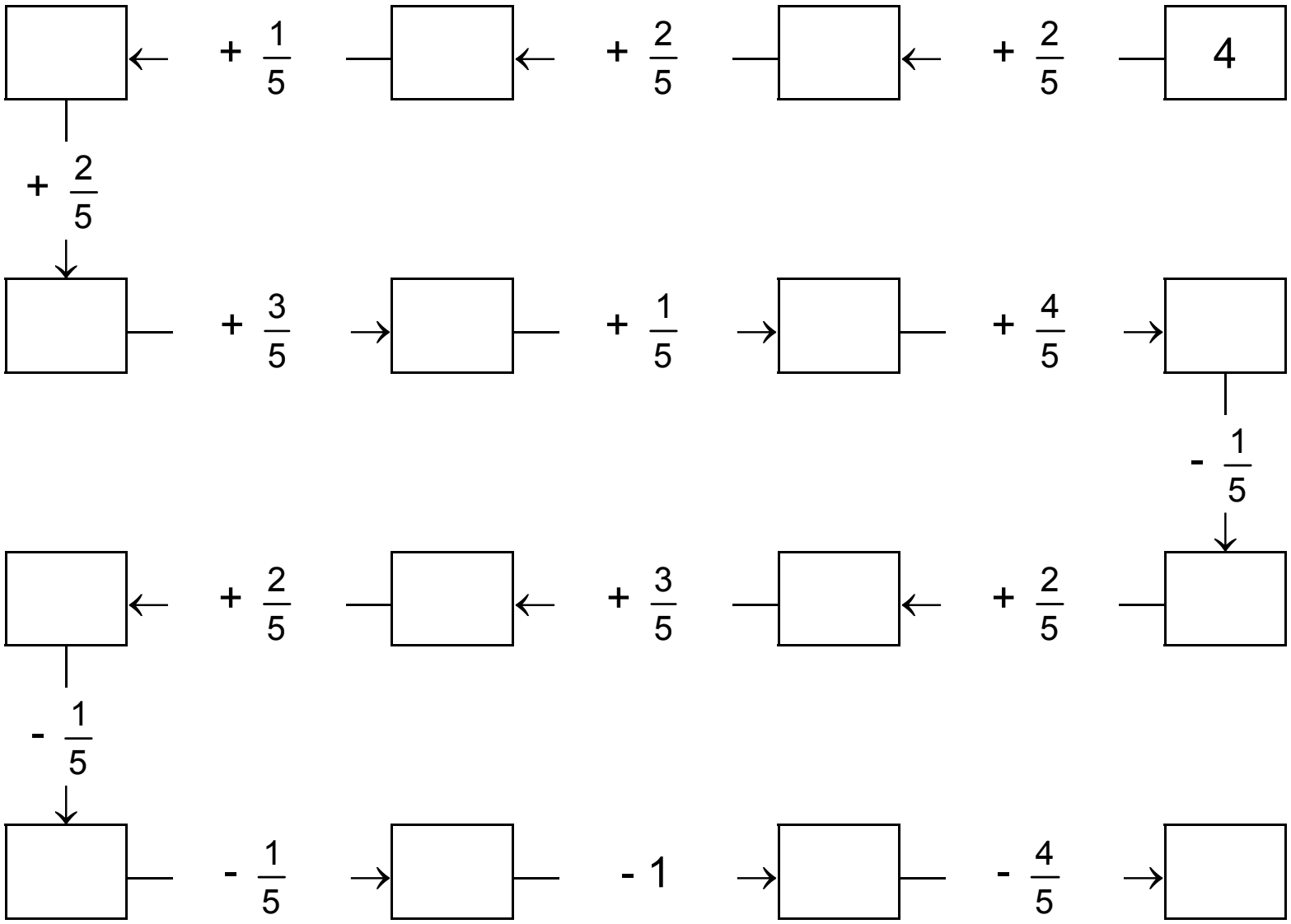
Complete this chain:



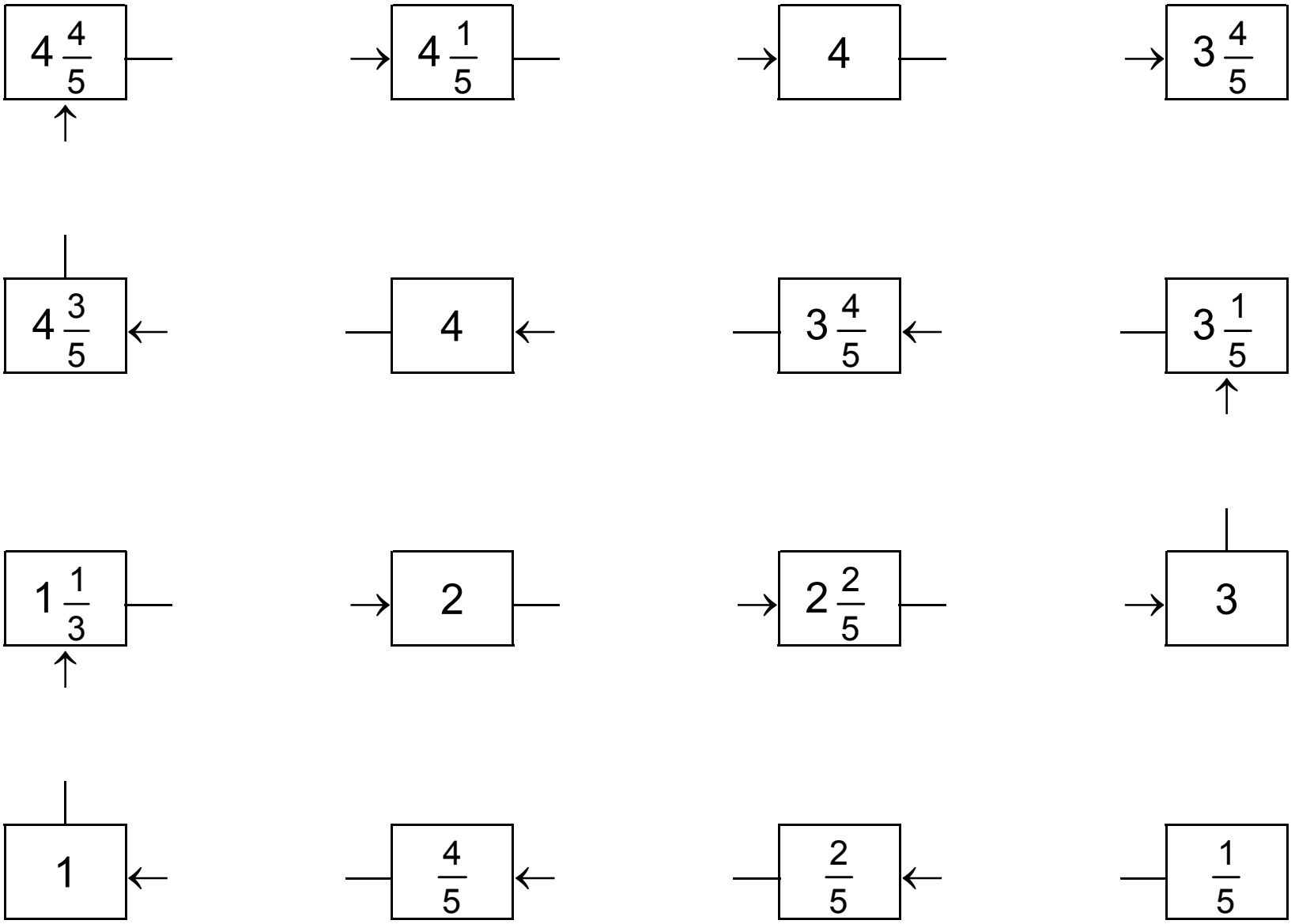
39. Intelligent Snake



Complete this chain:



40. Crusader Snake



41. More Ribbons (Assessment)

1. Nora has 1 meter of ribbon. She uses $\frac{1}{3}$ meter to wrap one package. How many packages can she wrap with 2 meters of ribbon?

2. Nora needs $\frac{1}{4}$ meter of ribbon to wrap a small package.

   (a) How many packages can she wrap with 2 meters of ribbon?

   (b) How many packages can she wrap with $1\frac{1}{2}$ meters of ribbon?

   (c) How many packages can she wrap with 1 meter of ribbon?

   (d) How many packages can she wrap with $\frac{1}{2}$ meter of ribbon?

   (e) How many packages can she wrap with $1\frac{1}{3}$ meters of ribbon?