Negative Numbers

Challenge Cards

1

Lily and Adam work together. They are counting in steps forwards and backwards, including negative numbers.

Lily gives Adam the starting number of 12 and tells him to count in steps of -5.

Adam counts: 12, 7, 2, -3, -8, -13, -18, -23, -28, -33

Can you repeat this challenge with a partner?
Give them a starting number and a sequence of steps to follow.
Remember that you can choose whether to go forwards or backwards and your start number could be negative or positive.

2

Jiang writes the following statements:

- Negative nine is thirteen less than four.
- -23 + 17 = -40
- 34 more than -12 = 22
- The temperature inside is 15°C. Outside it is 22°C colder, so outside the temperature is 7°C.

Giving reasons, explain whether each statement is true or false.

3

Lily writes the following calculations:

14 - 25 =

-4 + 17 =

Write an explanation, including visual methods, showing how to calculate the answers to these problems.

Compare your explanations with a partner.
Can you make any improvements?

Adam writes the calculation: -5 + 18 = 13

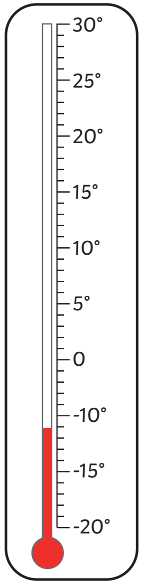
He writes a real-life example with money to illustrate the calculation.

"I owe my dad £5. I sell a computer game to a friend for £18. After I pay back my dad, I have £13 left."

He writes another calculation: 16 - 19 = -3

Write a real-life example with money to illustrate the calculation. Share with a partner and make any improvements.

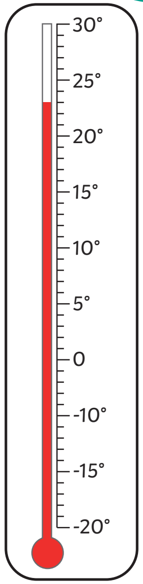
Negative Numbers Challenge Cards



Jiang has two thermometers. He places one in a bowl of ice with some salt and he keeps the other on the table.

Write two calculations with explanations to show the difference in temperature between the salted ice and the room.

Write your own scenario with two thermometers, where both temperatures are negative, and explain with calculations.



Negative Numbers Challenge Cards

Lily writes the following linear sequences:

-13, -9, -3, 1, 5, 9, 13

16, 9, 2, -3, -10, -17

29, 18, 7, -6, -15, -24

Can you spot and explain the errors that Lily has made?

Write some incorrect sequences for a partner to check.

Negative Numbers Challenge Cards

Adam says, "When you count backwards in tens from a positive number through zero, the ones digit will always stay the same."

Explain why Adam is incorrect, but when he might be correct.

Compare your answers with a partner and make any improvements to your own explanation.

Negative Numbers Challenge Cards **Answers**

1. **Multiple answers possible.**

2. Jiang writes the following statements:

   - Negative nine is thirteen less than four. **True: 4 - 13 = -9**
   - -23 + 17 = -40 **False: -23 + 17 = -6. Adding 17 will increase the answer, taking it closer to the positive numbers.**
   - 34 more than -12 = 22 **True: -12 + 34 = 22**
   - The temperature inside is 15°C. Outside it is 22°C colder, so outside the temperature is 7°C. **False: Outside is -7°C. 22°C colder than 15°C will be less than 0°C, so the temperature will be negative.**

   Giving reasons, explain whether each statement is true or false.

3. Lily writes the following calculations:

   14 - 25 = **-11**

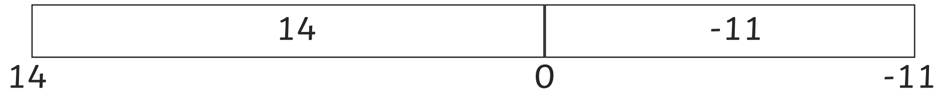
   -4 + 17 = **13**

   Write an explanation, including visual methods, showing how to calculate the answers to these problems.

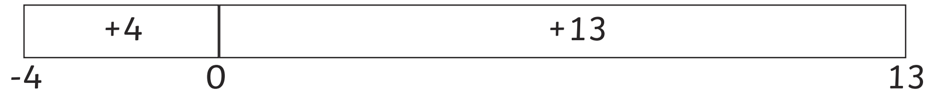
   Compare your explanations with a partner. Can you make any improvements?

   Accept correct explanations, such as:

   -25 can be split into -14 to 0 and -11 beyond 0 to -11.



   +17 can be split into +4 to 0 and +13 to 13.



4. Adam writes the calculation: -5 + 18 = 13

   He writes a real-life example with money to illustrate the calculation.

   “I owe my dad £5. I sell a computer game to a friend for £18. After I pay back my dad, I have £13 left.”

   He writes another calculation: 16 - 19 = -3

   Write a real-life example with money to illustrate the calculation. Share with a partner and make any improvements.

   Accept any correct real-life world problem involving money, for example ‘I have £16. I want to buy a shirt for £19, so I borrow £3 from my mother. I now have a debt of £3’.

Negative Numbers Challenge Cards **Answers**

5. Jiang has two thermometers. He places one in a bowl of ice with some salt and he keeps the other on the table. Here are the readings on the thermometers:

   Write two calculations with explanations to show the difference in temperature between the salted ice and the room.

   Accept correct calculations and explanations. For example, -11 + 34 = 23. The temperature in the classroom is 34°C warmer than the temperature of the salted ice.

   23 - -11 = 34. The difference between the temperature in the room and in the slated ice is 34°C.

   Write your own scenario with two thermometers, where both temperatures are negative, and explain with calculations.

   Accept any correct response, such as 'Two thermometers are placed outside on a freezing cold day. One is close to the school, and the other in the middle of the playground. The thermometer close to the school measures -2°C. The thermometer in the playground measures -6°C.'

6. Lily writes the following linear sequences: -13, -9, -3, 1, 5, 9, 13

   The step is +4, so Lily has added 6 to -9 to get -3, when it should be -5.

   16, 9, 2, -3, -10, -17

   The step is -7, so Lily has made a mistake crossing 0 and only subtracted 5 from 2 to get to -3, when 7 should be subtracted to get to -5.

   29, 18, 7, -6, -15, -24

   Can you spot and explain the errors that Lily has made?

   The step is -11. Lily has mistakenly continued the pattern of the ones digit decreasing by 1 each step, but when the step crosses 0, the ones digits should start increasing by 1.

7. Adam says, "When you count backwards in tens from a positive number through zero, the ones digit will always stay the same."

   Explain why Adam is incorrect, but when he might be correct.

   Compare your answers with a partner and make any improvements to your own explanation.

   Accept a correct explanation with an example. For example, counting back from 14: 14, 4, -6, -16. The ones digit changes. This will be true for any sequence beginning with a number ending in 1, 2, 3, 4, 6, 7, 8, 9.

   However, when you count backwards in tens from a number ending in 0 or 5, the ones digit will always be 0 or 5 respectively: 15, 5, -5, -15 or 20, 10, 0, -10, -20.

Number and Place Value Challenge Cards

1

Question

Write the value of the underlined digit in each number:

a) 675 801

b) 344 156

c) 813 430

d) 548 132

e) 970 130

f) 100 768

2

Question

The numbers in this sequence increase by 10 000 each time. Fill in the missing numbers:

671 766, 681 766, __________, __________,

__________, __________, __________.

3

Question

Compare these numbers using < or >:

a) 989 450 ___ 998 540

b) 876 345 ___ 877 345

c) 213 600 ___ 312 060

d) 559 810 ___ 555 980

e) 300 071 ___ 293 771

f) 669 243 ___ 696 244

Number and Place Value Challenge Cards

4

Question

Put these numbers in order from smallest to largest:

600 460, 460 300, 346 390, 640 460,

364 390, 346 391, 461 400

Number and Place Value Challenge Cards

5

Question

783 455 Round this number to...

a) The nearest 10.

b) The nearest 100.

c) The nearest 1000.

d) The nearest 10 000.

Number and Place Value Challenge Cards

6

Question

Continue this number sequence:

451 305, 451 315, 451 325, ______, ______,

______, ______, ______, ______, ______,

Number and Place Value Challenge Cards

7

Question

What is the value of each set of Roman numerals?

a) MDXI

b) MMCCL

c) DCIX

d) MMMCIV

e) DCXIX

f) MDCCXCIV

8

Question

Write each number using Roman numerals:

a) 2096
b) 1490
c) 3995
d) 555
e) 2963
f) 998

Number and Place Value Challenge Cards

9

Question

In this number sequence, one hundred is added each time. Fill in the missing numbers:

322 724, 322 824, ______, ______, ______,
______, ______, ______, ______

Number and Place Value Challenge Cards

10

Question

Add one thousand to each number:

a) 347 601
b) 876 100
c) 190 388
d) 569 433
e) 299 599
f) 689 665

Number and Place Value Challenge Cards

11

Question

Find ten thousand less, and ten thousand more than each number:

a) ______ 898 450 ______
b) ______ 665 433 ______
c) ______ 348 220 ______
d) ______ 879 150 ______
e) ______ 294 540 ______

Question

Continue these number sequences:

a) 24 15 6 __ __ __ __ __

b) 28 19 10 1 __ __ __ __ __

c) 12 5 -2 __ __ __ __ __

Number and Place Value Challenge Cards

Question

Put these Roman numerals in order from smallest to largest:

a) MDLXIX

b) MCCXXIV

c) MCDVI

d) CXC

e) MMCMLXI

f) MMD

g) CCCLXIV

Number and Place Value Challenge Cards

Question

Write these numbers in words:

a) 678 433

b) 399 201

c) 723 011

d) 500 009

e) 104 100

Number and Place Value Challenge Cards

Question

Write these numbers in figures:

a) One hundred and sixty thousand, three hundred and sixty-one

b) Seven hundred and ninety-four thousand, two hundred and fifty-five

c) Five hundred and five thousand, eight hundred and twenty

d) Nine hundred thousand, four hundred and two

e) Three hundred and thirty-three thousand, and five

Number and Place Value Challenge Cards

16

Question

Add ten to each number:

a) 899 991

b) 345 595

c) 479 998

d) 128 795

e) 606 982

f) 199 990

Number and Place Value Challenge Cards

17

Question

What do the numbers in this sequence increase by each time?

456 332, 457 332, 458 332, 459 332

Number and Place Value Challenge Cards

18

Question

Fill in the missing numbers in this sequence:

311 023, _______, 311 223, _______,

311 423, _______, 311 623, _______,

Number and Place Value Challenge Cards

19

Question

856 732 In this number...

a) How many tens are there?

b) How many thousands are there?

c) How many hundreds of thousands are there?

d) How many hundreds are there?

e) How many tens of thousands are there?

f) How many ones are there?

Number and Place Value

Challenge Card Answers

Number and Place Value Challenge Cards

1

Answer

a) Seventy thousand

b) Four thousand

c) Eight hundred thousand

d) One hundred

e) Thirty

f) One hundred thousand

Number and Place Value Challenge Cards

2

Answer

671 766, 681 766, 691 766, 701 766,

711 766, 721 766, 731 766

Number and Place Value Challenge Cards

3

Answer

a) 989 450 < 998 540

b) 876 345 < 877 345

c) 213 600 < 312 060

d) 559 810 > 555 980

e) 300 071 > 293 771

f) 669 243 < 696 244

Answer

346 390, 346 391, 364 390, 460 300,
461 400, 600 460, 640 460

Number and Place Value Challenge Cards

Answer

a) 783 460

b) 783 500

c) 783 000

d) 780 000

Number and Place Value Challenge Cards

Answer

451 305, 451 315, 451 325, 451 335,
451 345, 451 355, 451 365, 451 375,
451 385

Number and Place Value Challenge Cards

Answer

a) 1511

b) 2250

c) 609

d) 3104

e) 619

f) 1794

Answer

a) MMXCVI

b) MCDXC

c) MMMCMXCV

d) DLV

e)MMCMLXIII

f)CMXCVIII

Number and Place Value Challenge Cards

Answer

322 724, 322 824, 322 924, 323 024,

323 124, 323 224, 323 324, 323 424

Number and Place Value Challenge Cards

Answer

a) 348 601

b) 877 100

c) 191 388

d) 570 433

e) 300 599

f) 690 665

Number and Place Value Challenge Cards

Answer

a) 888 450 898 450 908 450

b) 655 433 665 433 675 433

c) 338 220 348 220 358 220

d) 869 150 879 150 889 150

e) 284 540 294 540 304 540

Number and Place Value Challenge Cards

12

Answer

a) 24 15 6 -3 -12 -21 -30 -39

b) 28 19 10 1 -8 -17 -26 -35 -44

c) 12 5 -2 -9 -16 -23 -30 -37

Number and Place Value Challenge Cards

13

Answer

a) CXC = 190

b) CCCLXIV = 364

c) MCCXXIV = 1224

d) MCDVI = 1406

e) MDLXIX = 1569

f) MMCMLXI = 2961

g) MMD = 2500

Number and Place Value Challenge Cards

14

Answer

a) Six hundred and seventy-eight thousand, four hundred and thirty-three

b) Three hundred and ninety-nine thousand, two hundred and one

c) Seven hundred and twenty-three thousand and eleven

d) Five hundred thousand and nine

e) One hundred and four thousand one hundred

Number and Place Value Challenge Cards

15

Answer

a) 160 361

b) 794 255

c) 505 820

d) 900 402

e) 333 005

Answer

a) 900 001

b) 345 605

c) 480 008

d)128 805

e) 606 992

f) 200 000

Number and Place Value Challenge Cards

Answer

The numbers increase by 1000 each time.

Number and Place Value Challenge Cards

Answer

311 023, 311 123, 311 223, 311 323,

311 423, 311 523, 311 623, 311 723,

Number and Place Value Challenge Cards

Answer

a) 3

b) 6

c) 8

d) 7

e) 5

f) 2

Number and Place Value Roman Numerals

Challenge Cards

1

In Roman numerals, each letter represents a value. To read Roman numerals you add up the values of the letters used.

Find an example of a Roman numeral which proves that this statement is false.

Share your answer with a partner.
Write an explanation of why it is false.

2

You should never write a Roman numeral using I, X or C, more than three times

Find an example of a Roman numeral which proves that this statement is true.

Share your answer with a partner.
Write an explanation of why this statement is true.

3

Adam is investigating writing numbers up to 200 using Roman numerals.

Which of the numbers on Adam's list will have two Roman numerals?

How will you record your answers systematically?

Check your answers with a partner.

Lily is investigating writing numbers less than 1000 using Roman numerals.

Which of the numbers on Lily's list will have three Roman numerals?

How will you record your answers systematically?

Check your answers with a partner.

To add these two Roman numerals together, all you need to do is combine all of the Roman numerals.

CCLXXVII + CLIX = CCCLLXXXVIII

Explain why this statement is false.

Try some of your own addition calculations with Roman numerals.

Adam is working out the answer to this subtraction calculation written using Roman numerals:

CCCXXIX - CLVII

Show how you could find the answer without converting the Roman numerals.

CCCXXIX - CLVII =

Lily wants to multiply two Roman numerals without converting the numbers.

CCLXXXIX × III =

Explain how to calculate the answer by combining the Roman numerals.

Number and Place Value Roman Numerals Challenge Cards **Answers**

1. “In Roman numerals, each letter represents a value. To read Roman numerals you add up the values of the letters used.”
   Find an example of a Roman numeral which proves that this statement is false.
   Share your answer with a partner. Write an explanation of why it is false.
   Accept any explanation that refer to simply adding the values of the letters. For example, 496 = CDXCVI
   If we added add these values together we would get 716.
   When a smaller symbol is after a larger symbol, we use addition but when a smaller symbol is before a larger symbol, we use subtraction.

2. “You should never write a Roman numeral using I, X or C, more than three times in a row.”
   Find an example of a Roman numeral which proves that statement is true.
   Share your answer with a partner. Write an explanation of why it is true.
   Accept any correct explanation that refers to subtracting the letter values. For example, with Roman numerals, a group of four I, X or C is shown by subtracting the letter value from another letter. For instance, 4 = 5 - 1 = IV, 40 = 50 - 10 = XL, 400 = 500 - 100 = CD

3. Adam is investigating writing numbers up to 200 using Roman numerals.
   Which of the numbers on Adam’s list will have two Roman numerals?
   How will you record your answers systematically?
   Check your answers with a partner.
   II IV VI IX XI XV XX XL LI LV LX XC
   CI CV CX CL CC

4. Lily is investigating writing numbers less than 1000 using Roman numerals.
   Which of the numbers on Lily’s list will have exactly three Roman numerals that will be different?
   How will you record your answers systematically?
   Check your answers with a partner.
   XIV, XVI, XLI, XLV, LIV, LVI, LIX, LXI, LXV, XCI, XCV, CIV, CVI, CIX, CXV, CXI, CXL, CLI, CLV, CLX, CDI, CDV, CDX, CDL, DIV, DVI, DIX, DXL, DLX, DCI, DCV, DCX, DCL, CMI, CMV, CMX, CML

"To add these two Roman numerals together, all I need to do is combine all of the Roman numerals."
CCLXXVII + CLIX = CCCLLXXXVIII
Explain why statement is false.
Try some of your own addition calculations with Roman numerals.
Accept any explanation that explains that Roman numerals cannot just be added. For example, the two Roman numerals are 277 + 159, which equal 436. By combining all of the Roman numerals together, Jiang has created the answer 438. This also doesn't work because a group of four I, X or C is shown by subtracting the letter value from another letter.

5. Adam is working out the answer to this subtraction calculation written using Roman numerals:
   CCCXXIX - CLVII
   Show how you could find the answer without converting the Roman numerals.
   CCCXXIX - CLVII = **CLXXII**
   Accept any correct answer that involves combining the values. For example, combine the numbers so that each column has a larger number above.
   CCC - CL = CL
   XX - nothing = XX
   IX - VII = II

6. Lily wants to multiply two Roman numerals without converting the numbers.
   CCLXXXIX × III = **DCCCLXVII**
   Explain how to calculate the answer by combining the Roman numerals.
   CC × 3 = DC
   L × 3 = CL
   XXX × 3 = XC } **= CL + XC = CCXL**
   IX × 3 = XXVII
   = DC + CCXL + XXVII
   = DC + CCLXVII = DCCCLXVII

Number and Place Value Rounding Challenge Cards

1

Number and Place Value Rounding

Lily and Adam decided to play a game.

Lily starts by writing a number (up to six digits) on a small whiteboard. She reads the number to Adam, who must round it to the nearest 100.

If Adam answers correctly, he gets to write the next number.

If he gets it wrong, Lily gets a point and writes another number. They play until one of them has five points.

Play the game with a partner. If your partner needs help, show them the number or ask them to write it down.

2

Number and Place Value Rounding

Jiang writes these four numbers:

6000 12 000 34 000 200 000

For each of these numbers, write five numbers that can be rounded to the number when rounded to the nearest 1000.

For one of the numbers, explain the whole range of possible answers.

Compare your explanation with a partner. Can you improve your explanation?

3

Number and Place Value Rounding

Lily writes down some numbers:

406 345, 412 902, 403 672, 417 782, 405 000, 404 499

Which numbers are rounded to 410 000 when rounded to the nearest ten thousand?

Can you make your own version of this question for a partner to complete?

4

Number and Place Value Rounding

Adam writes two 6-digit numbers.
He rounds the numbers to the nearest 100 000.

He adds the rounded numbers together.
Then, he adds the original numbers together and rounds the answer to the nearest 100 000.

Will he get the same answer?

Does it depend on the numbers?

5

Number and Place Value Rounding

Lily says, "When you round a number to the nearest 1000, the important digit is the thousands digit."

Explain why Lily is not correct and write a better statement to explain how to round to the nearest 1000.

Share your explanation with a partner and make any improvements to your own explanation as a result.

6

Number and Place Value Rounding

Jiang and Adam work together.

Jiang has a number. He writes down 34 700 and says that this is the result when his number is rounded to the nearest 10. What is the largest possible number that Jiang could have chosen?

Adam has a number. He writes down 580 000 and says that this is the result when his number is rounded to the nearest 100. What is the smallest possible number that Adam could have chosen?

Work with a partner and set each other similar challenges.

7

Number and Place Value Rounding

Adam uses a standard dice.
He rolls the dice 5 times to create a 5-digit number.
He rounds the number to the nearest 1000.

He repeats this 30 times and finds that more of the numbers round down than round up. He expected half of the numbers to round up and half to round down.

Can you help Adam explain why this is the case?

Year 5 Number and Place Value Rounding Maths Mastery Challenge Cards **Answers**

1. Lily and Adam decided to play a game.

Lily starts by writing a number (up to six digits) on a small whiteboard. She reads the number to Adam, who must round it to the nearest 100. If Adam answers correctly, he gets to write the next number. If he gets it wrong, Lily gets a point and writes another number. They play until one of them has five points. Play the game with a partner. If your partner needs help, show them the number or ask them to write it down.

2. Jiang writes these four numbers:

6000 12 000 34 000 200 000

For each of these numbers, write five numbers that can be rounded to the number when rounded to the nearest 1000. For one of the numbers, explain the whole range of possible answers. Compare your explanation with a partner. Can you improve your explanation?

Accept any correct answer between 5500 and 6499, 11 500 and 12 499, 33 500 and 34 499, 199 500 and 200 499.

Accept any correct explanation. For example, if rounding to the nearest 1000 gives 6000, 5500 is the smallest in the range as the 5 hundreds will round up to 6000, but 4 hundreds would round down. 6499 is the greatest possible number because 4 hundreds will round down whereas 5 hundreds would round up.

3. Lily writes down some numbers:

406 345, 412 902, 403 672, 417 782, 405 000, 404 499

Which numbers are rounded to 410 000 when rounded to the nearest ten thousand? Can you make your own version of this question for a partner to complete?

406 345, 412 902, 405 000.

Accept any correct response.

4. Adam writes two 6-digit numbers. He rounds the numbers to the nearest 100 000.

He adds the rounded numbers together. Then, he adds the original numbers together and rounds the answer to the nearest 100 000. Will he get the same answer? Does it depend on the numbers?

Accept any explanation with examples that shows that roughly half of the answers will be the same and the rest will differ by 100 000.

For example, 225 000 + 325 000 = 550 000 which rounds to 600 000

200 000 + 300 000 = 500 000

5. Lily says, "When you round a number to the nearest 1000, the important digit is the thousands digit." Explain why Lily is not correct and write a better statement to explain how to round to the nearest 1000. Share your explanation with a partner and make any improvements to your own explanation as a result.

Accept any correct explanation. For example, when you round a number to the nearest 1000, the important digit is the hundreds digit. If the hundreds digit is 0 – 4, then round the number down. If the hundreds digit is 5 – 9, then round the number up.

6. Jiang and Adam work together.

Jiang has a number. He writes down 34 700 and says that this is the result when his number is rounded to the nearest 10. What is the largest possible number that Jiang could have chosen? Adam has a number. He writes down 580 000 and says that this is the result when his number is rounded to the nearest 100. What is the smallest possible number that Adam could have chosen?

Work with a partner and set each other similar challenges.

34 704

579 950

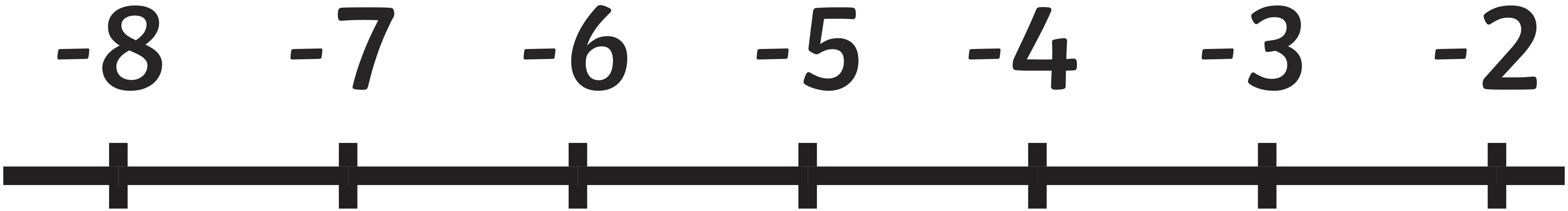
7. Adam uses a standard dice. He rolls the dice 5 times to create a 5-digit number. He rounds the number to the nearest 1000.

He repeats this 30 times and finds that more of the numbers round down than round up. He expected half of the numbers to round up and half to round down. Can you help Adam explain why this is the case?

Accept any suitable answer that refers to the numbers on the dice. For example, the dice has the numbers 1 to 6, so 1 – 4 will round down and only 5 – 6 will round up. Over time, it would be expected that twice as many numbers will round down.

-20 -19 -18 -17 -16 -1

15 -14 -13 -12 -11 -10 -9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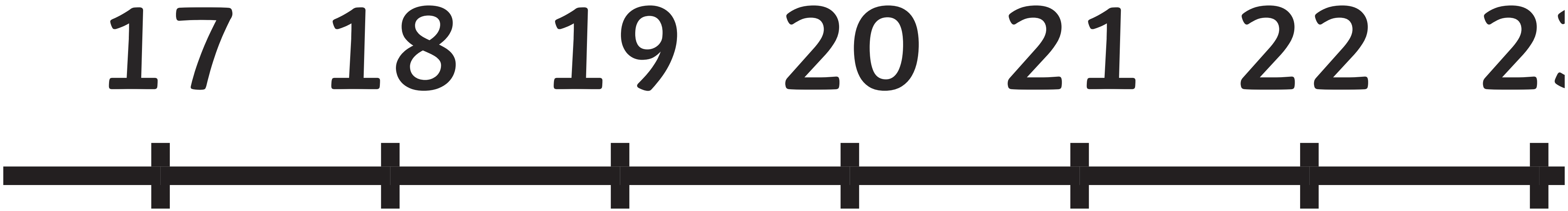
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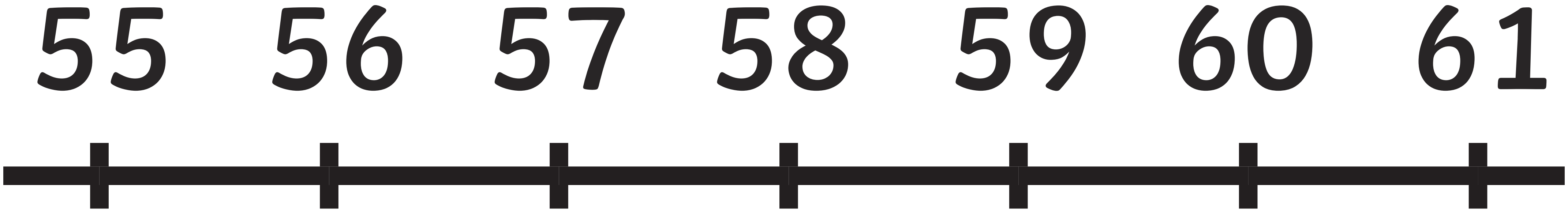
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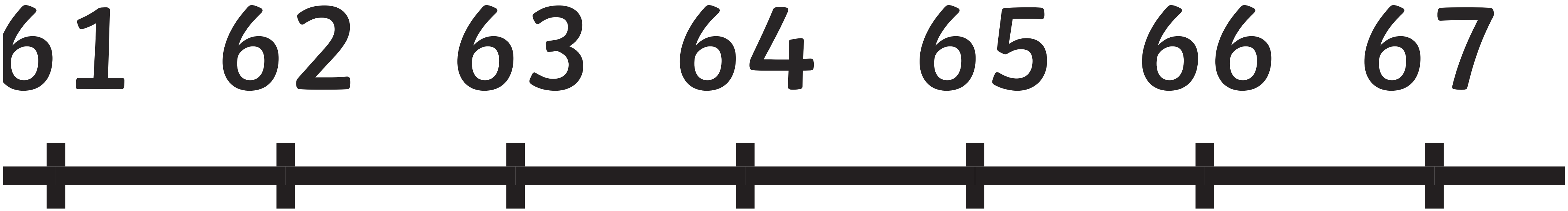
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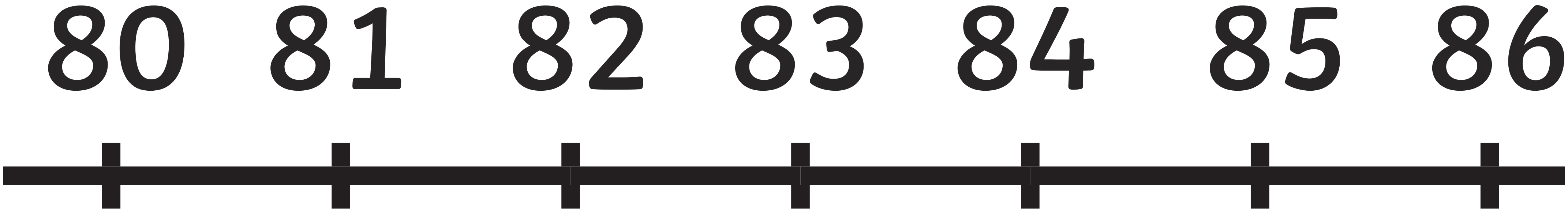
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-28

fold

fold

-27

fold

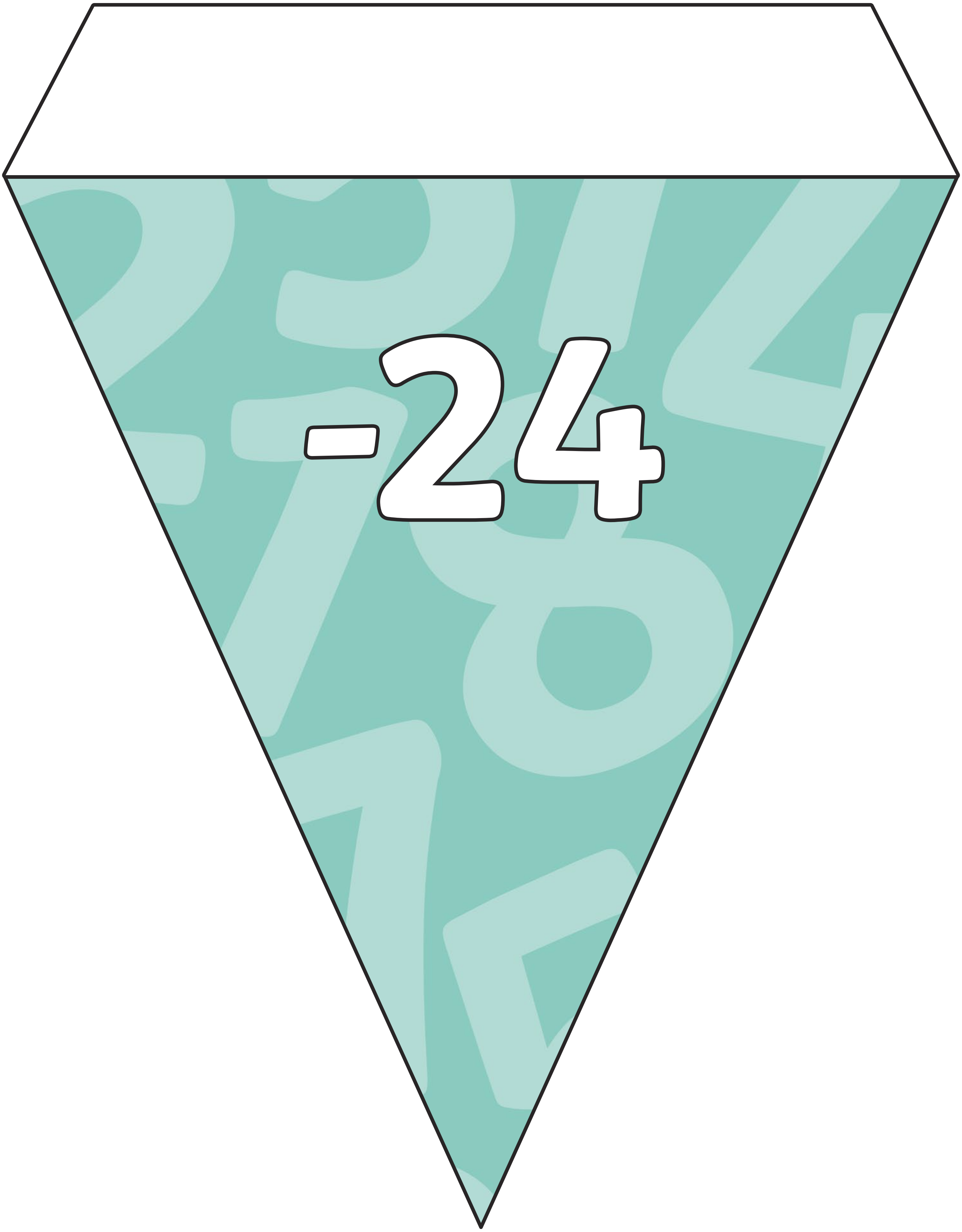
fold

-26

fold fold

-25

fold



fold

-23

fold

fold

-22

fold

fold

-21

fold

fold

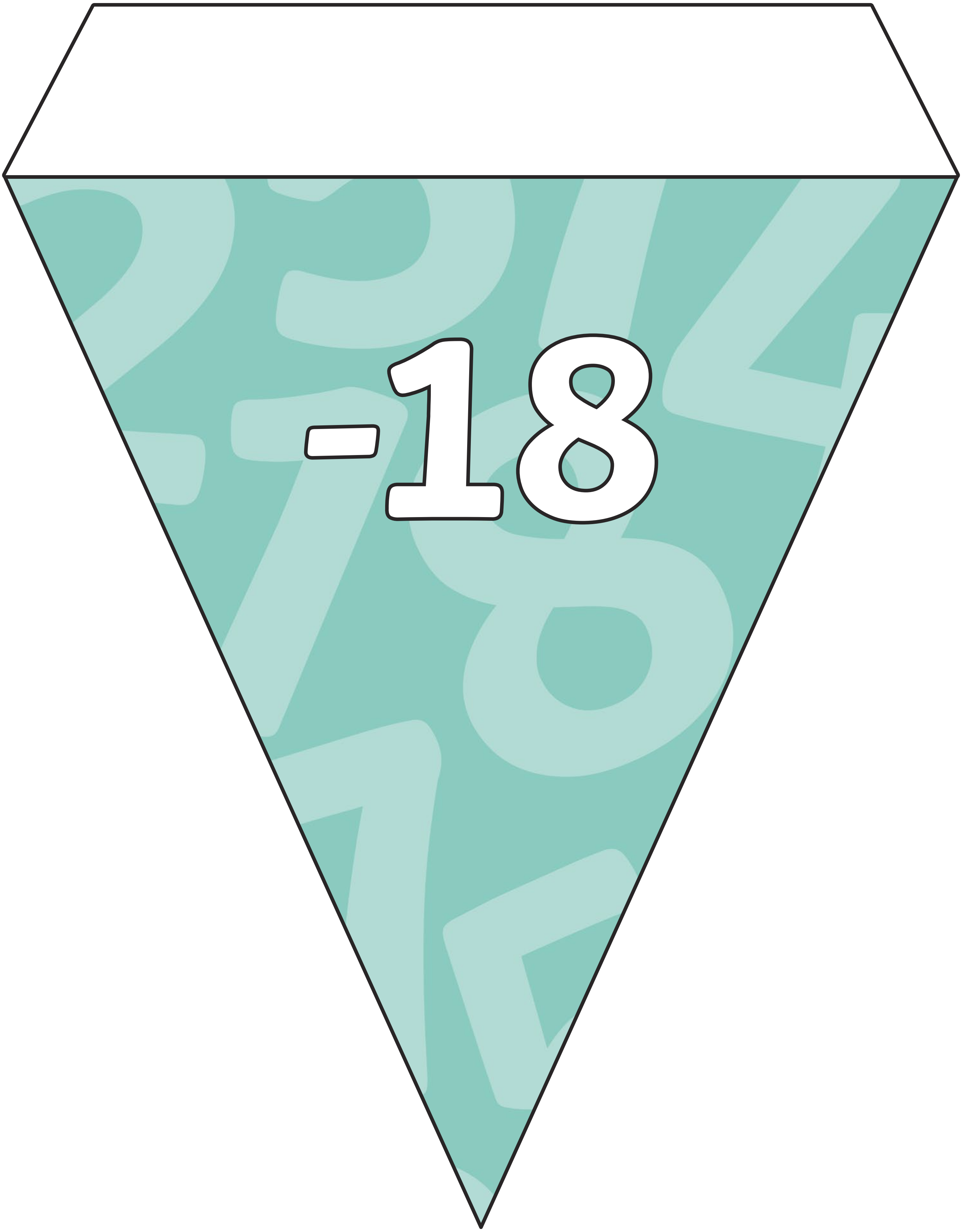
-20

fold

fold

-19

fold fold



fold

fold

-17

fold

fold

-16

fold

fold

-15

fold fold

-14

fold

fold

-13

fold

fold

-12

fold

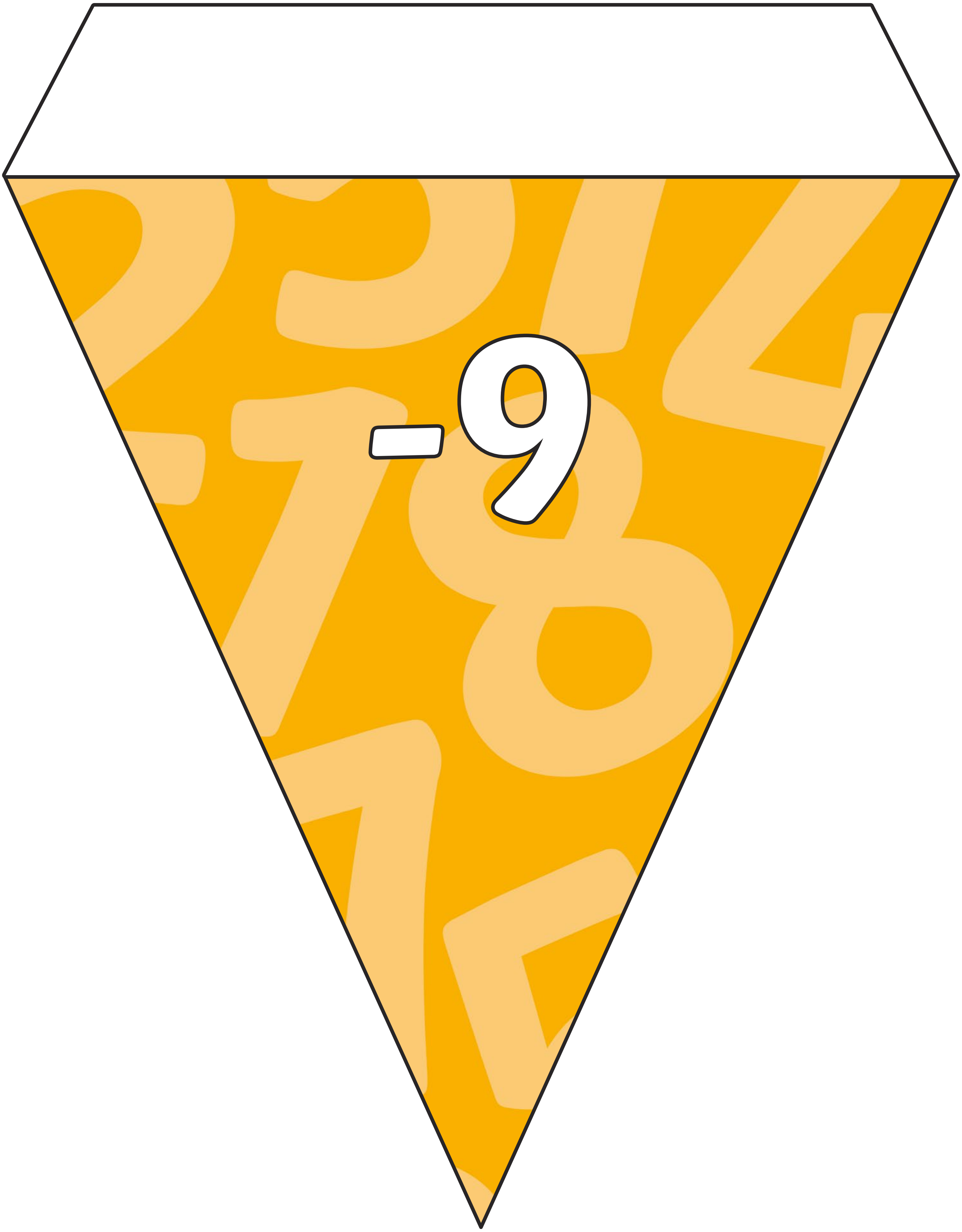
fold

-11

fold fold

-10

fold



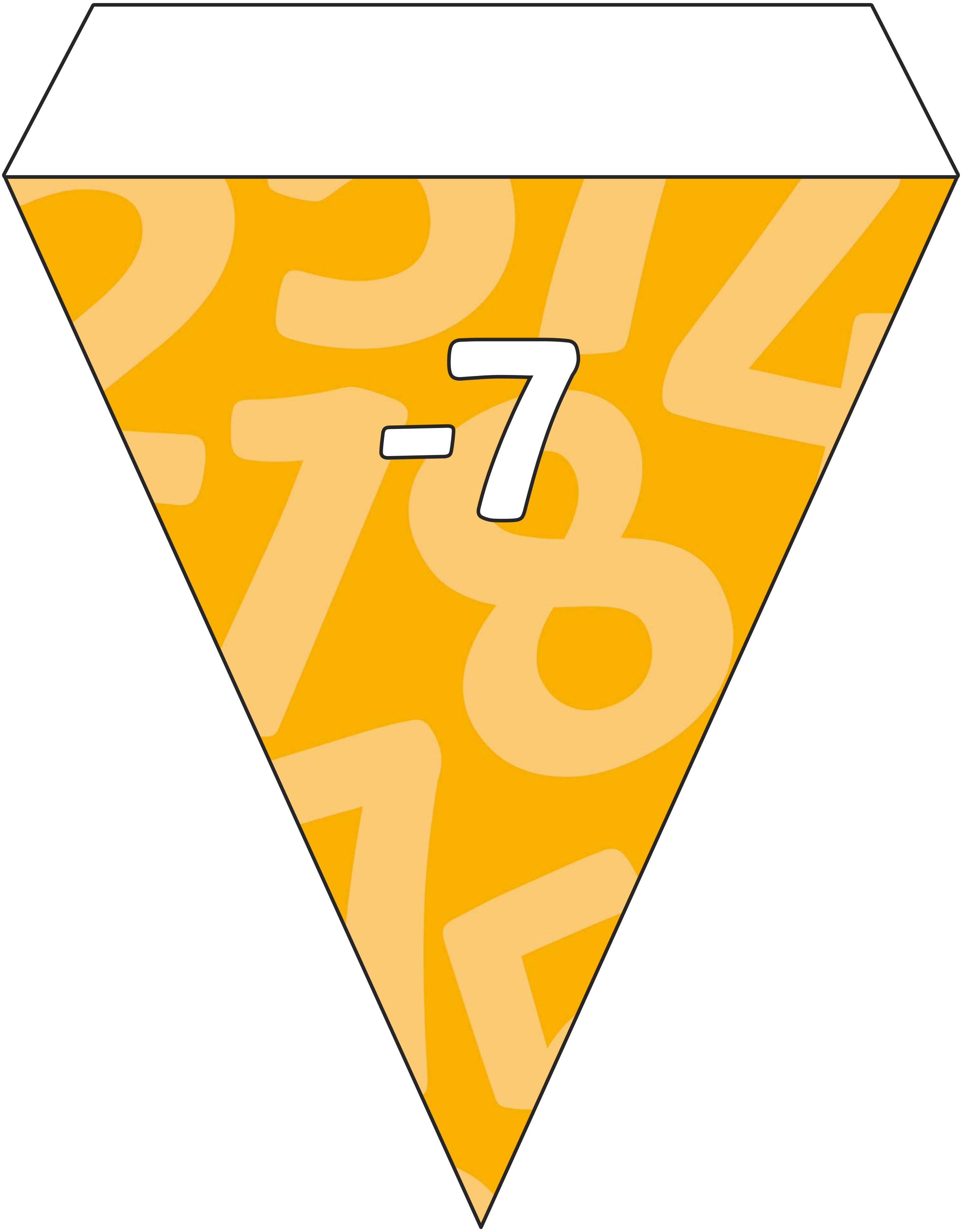
fold

fold

fold

-8

fold fold



fold

fold

-6

fold fold

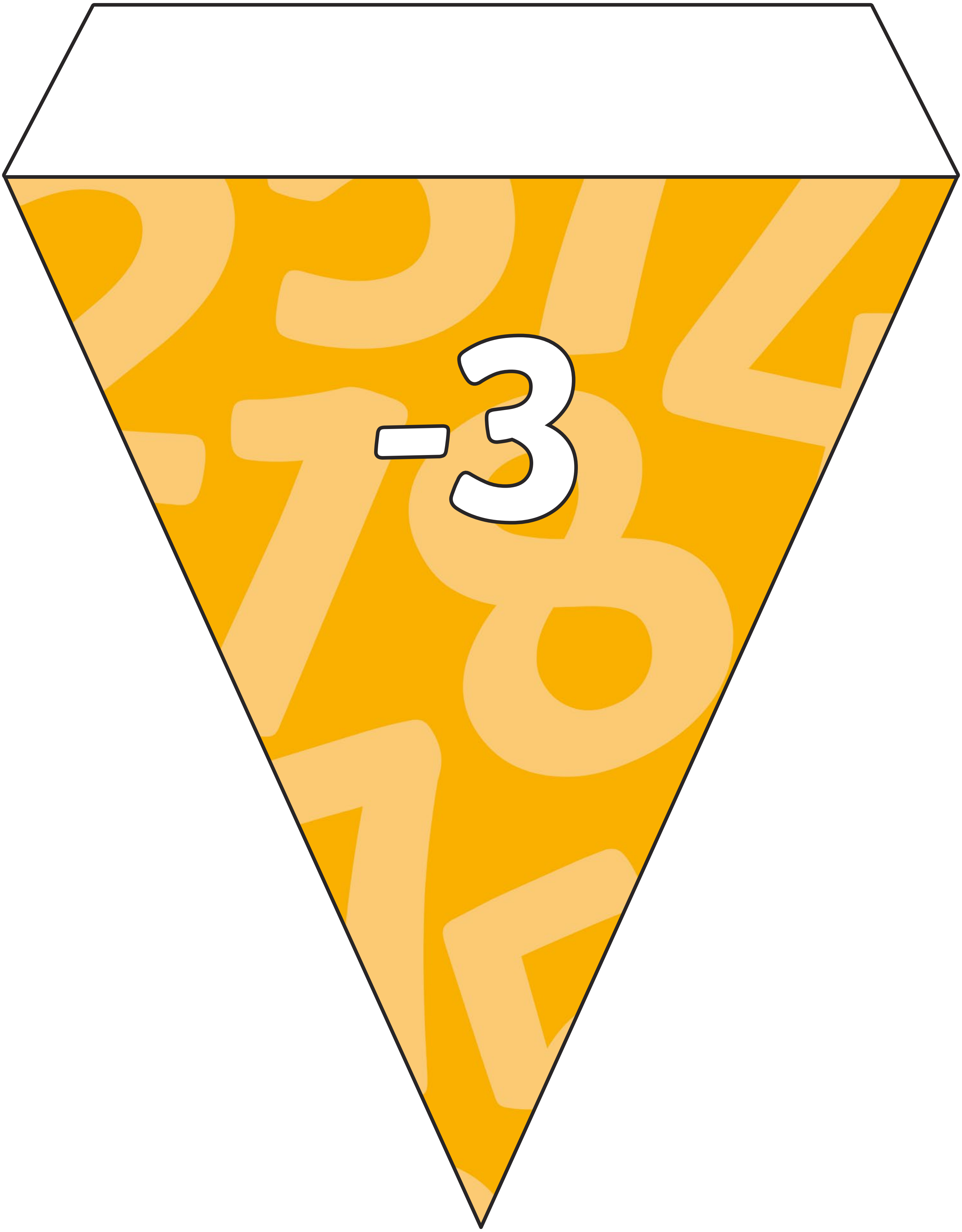
-5

fold

fold

-4

fold



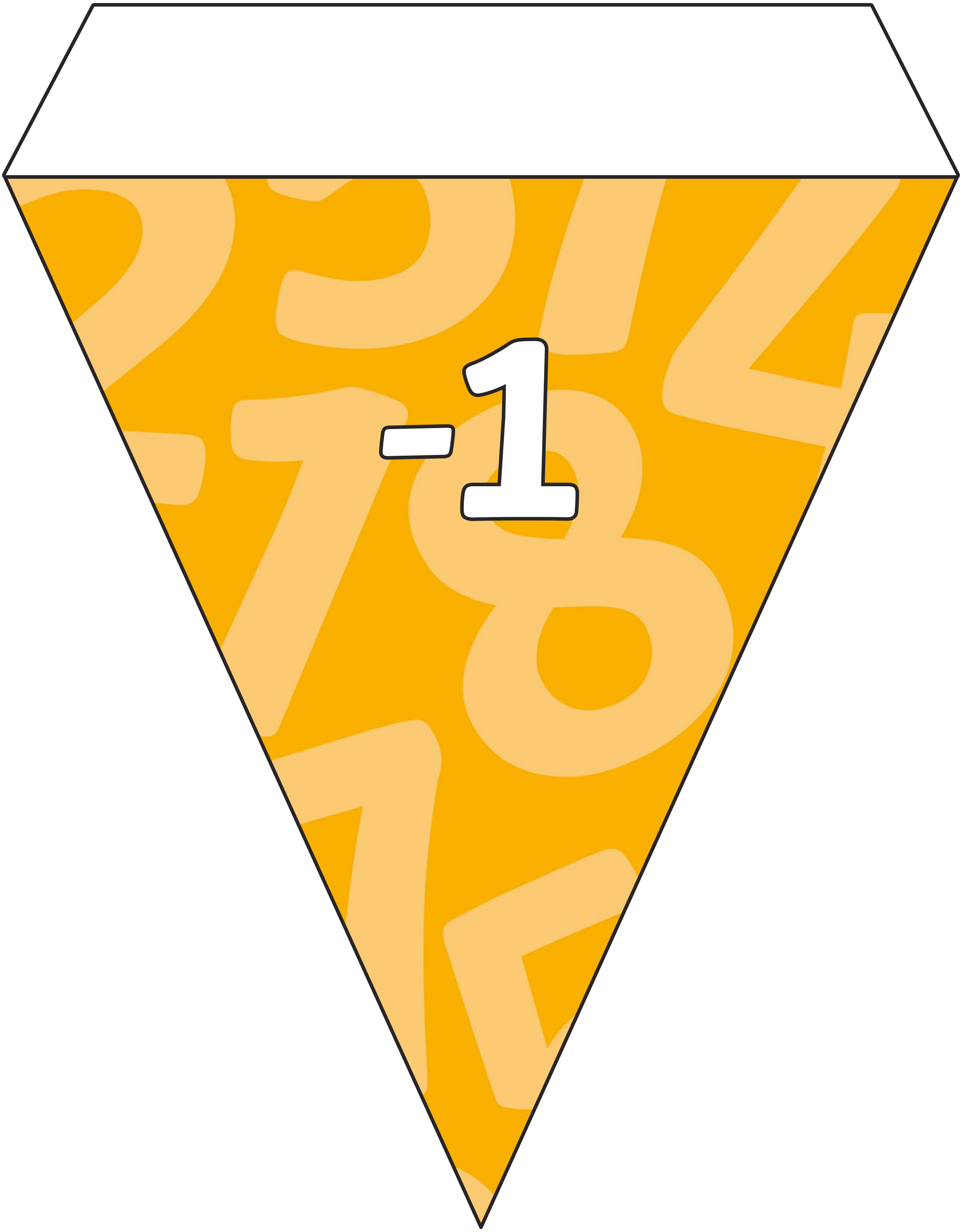
fold

fold

fold

-2

fold fold



fold

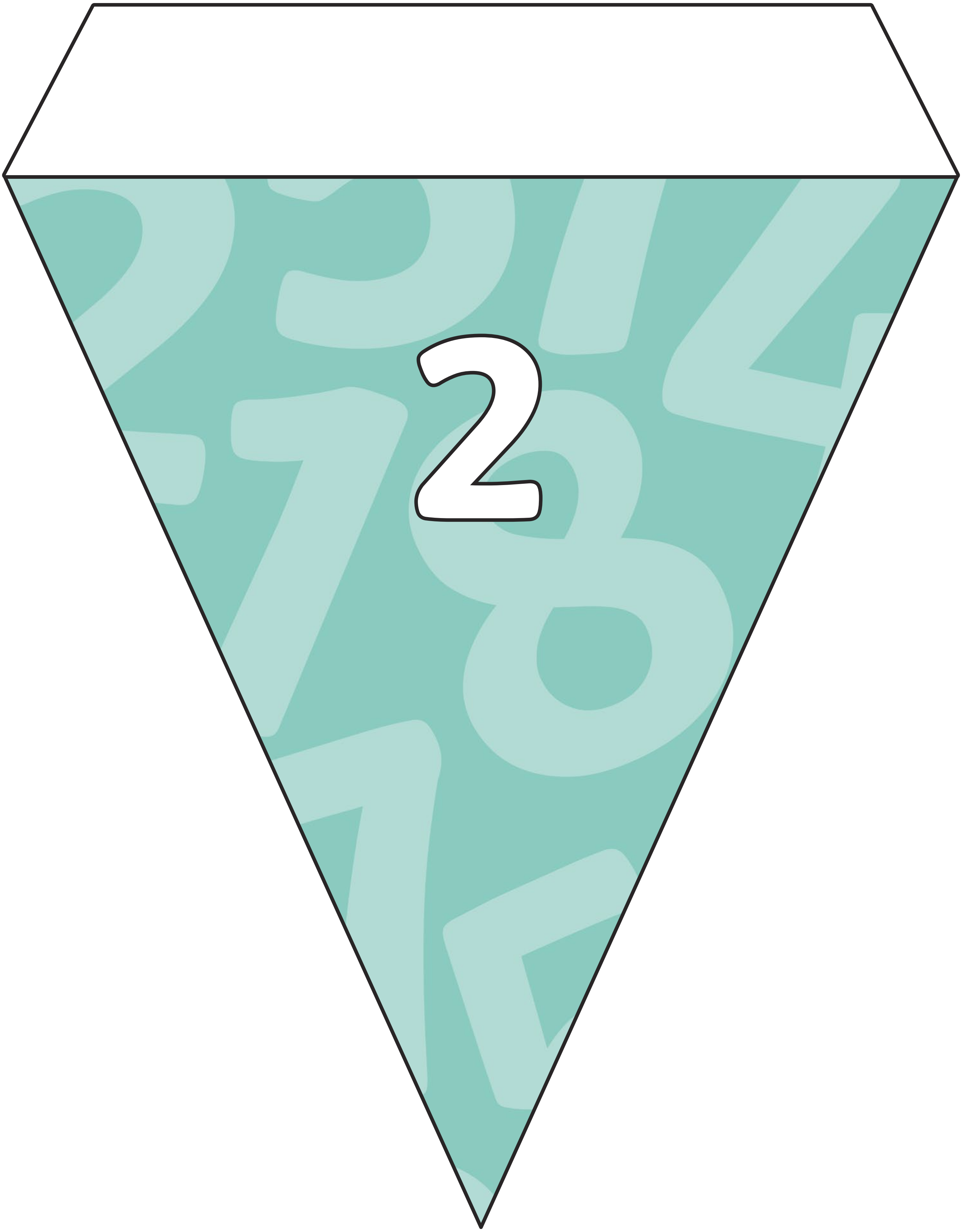
fold

0

fold

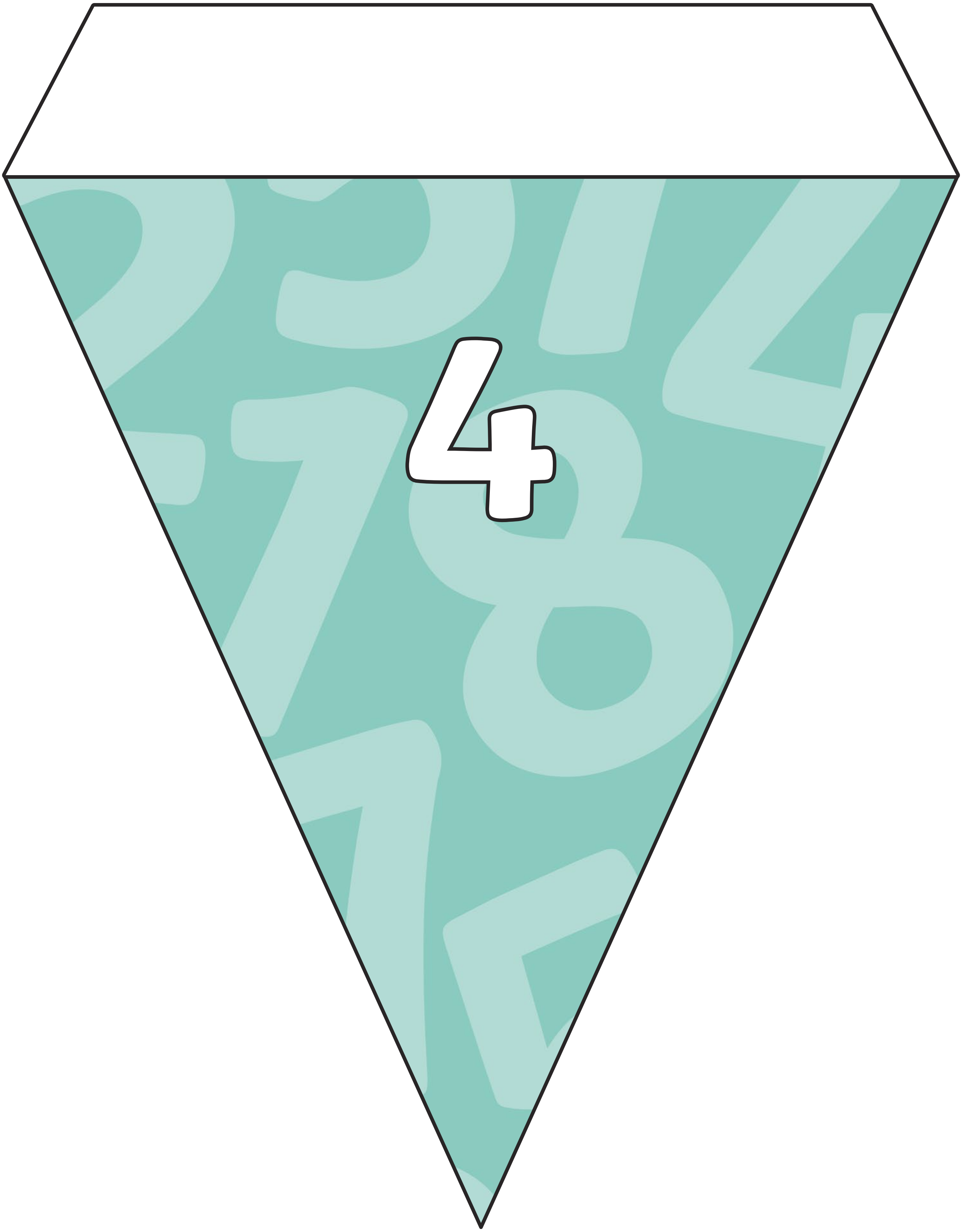
fold

fold fold



fold fold

fold

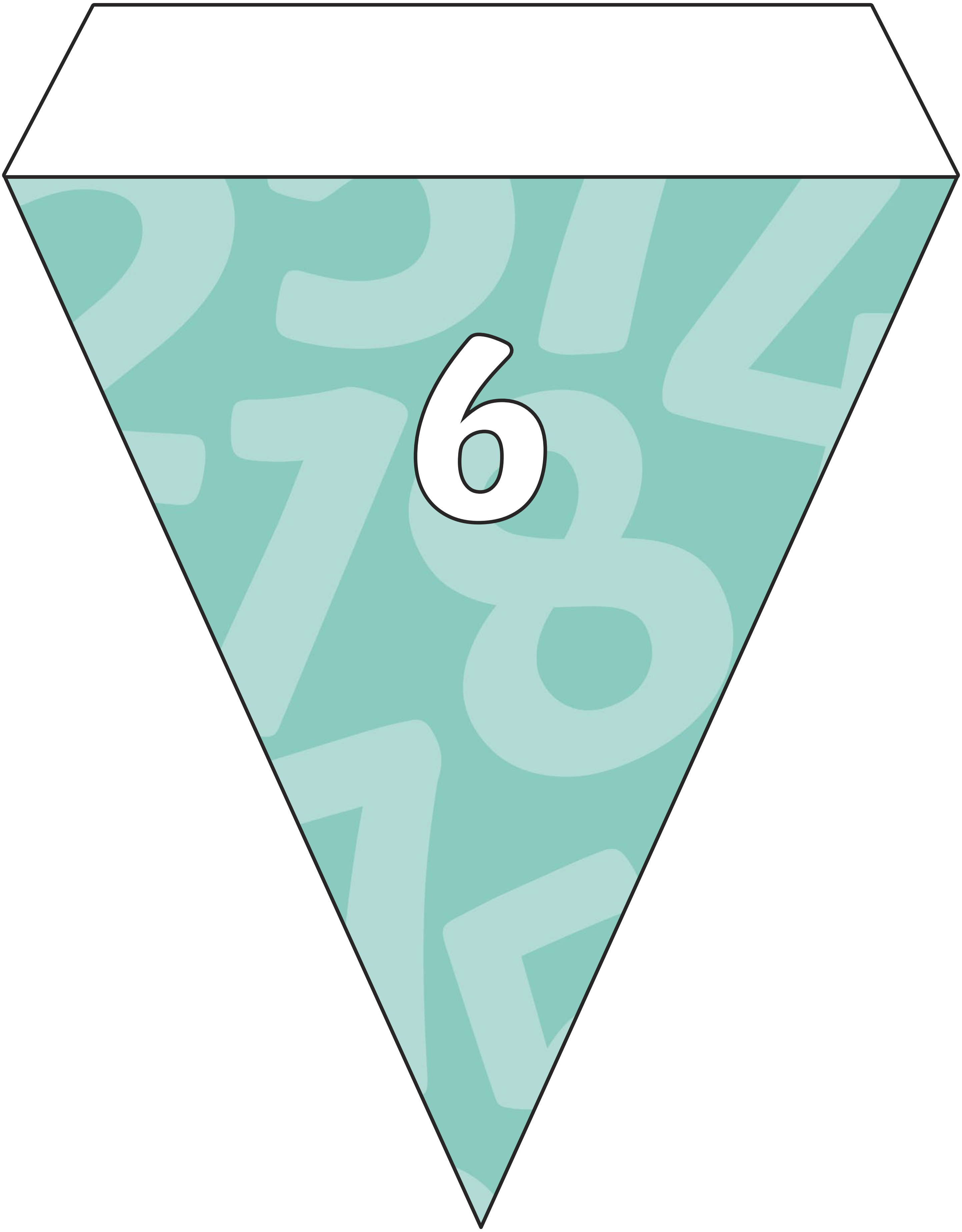


fold

fold

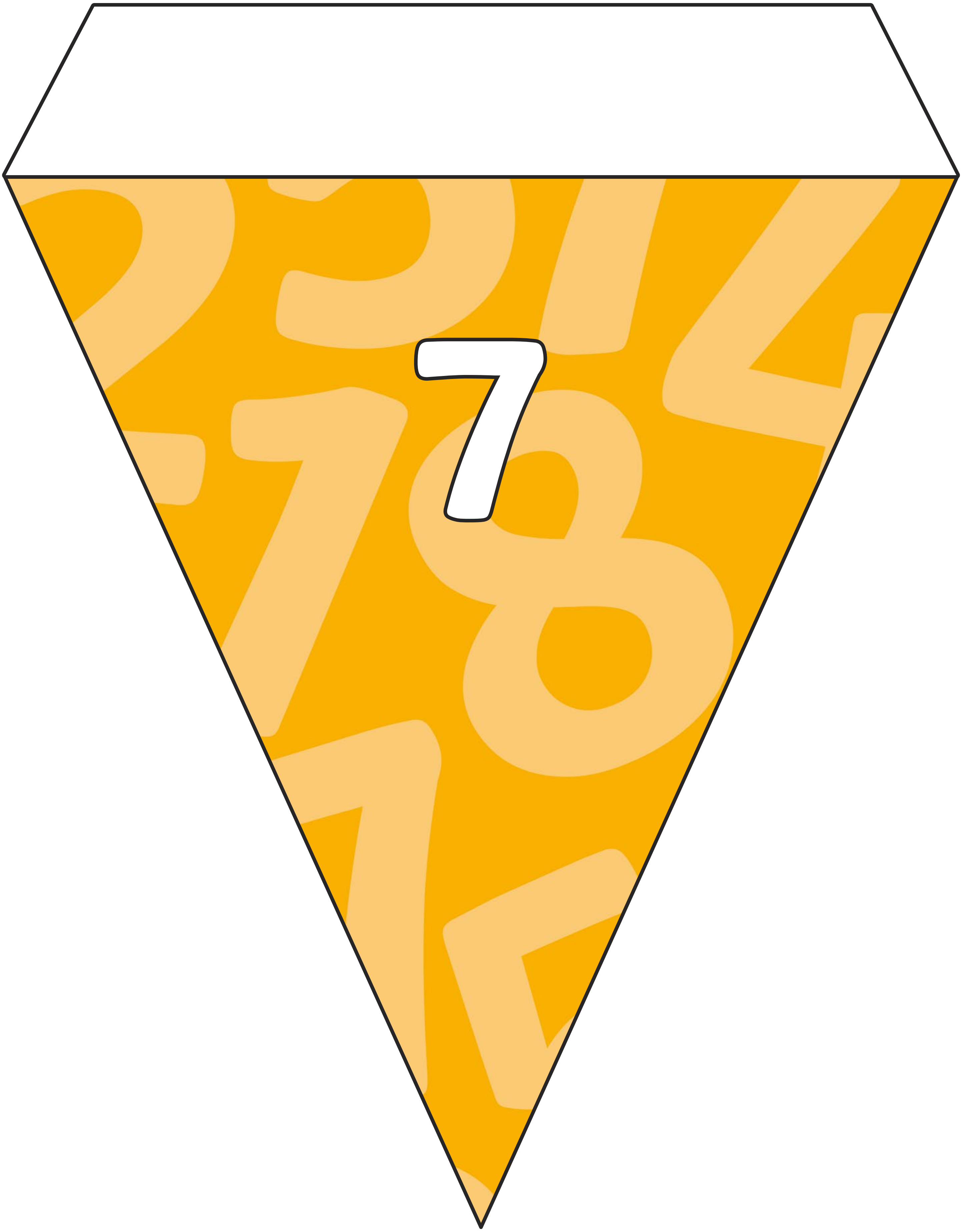
fold

fold

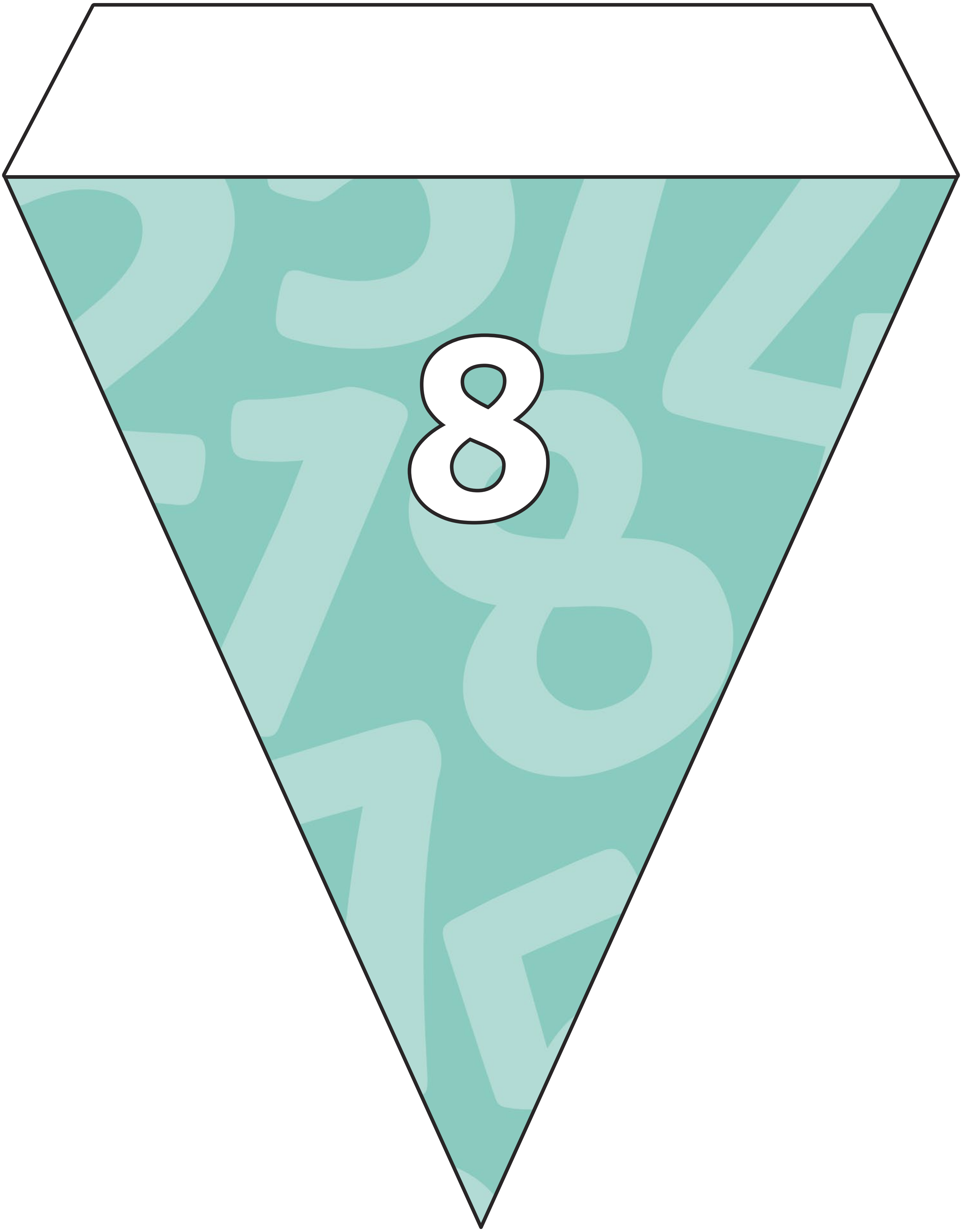


fold

fold fold



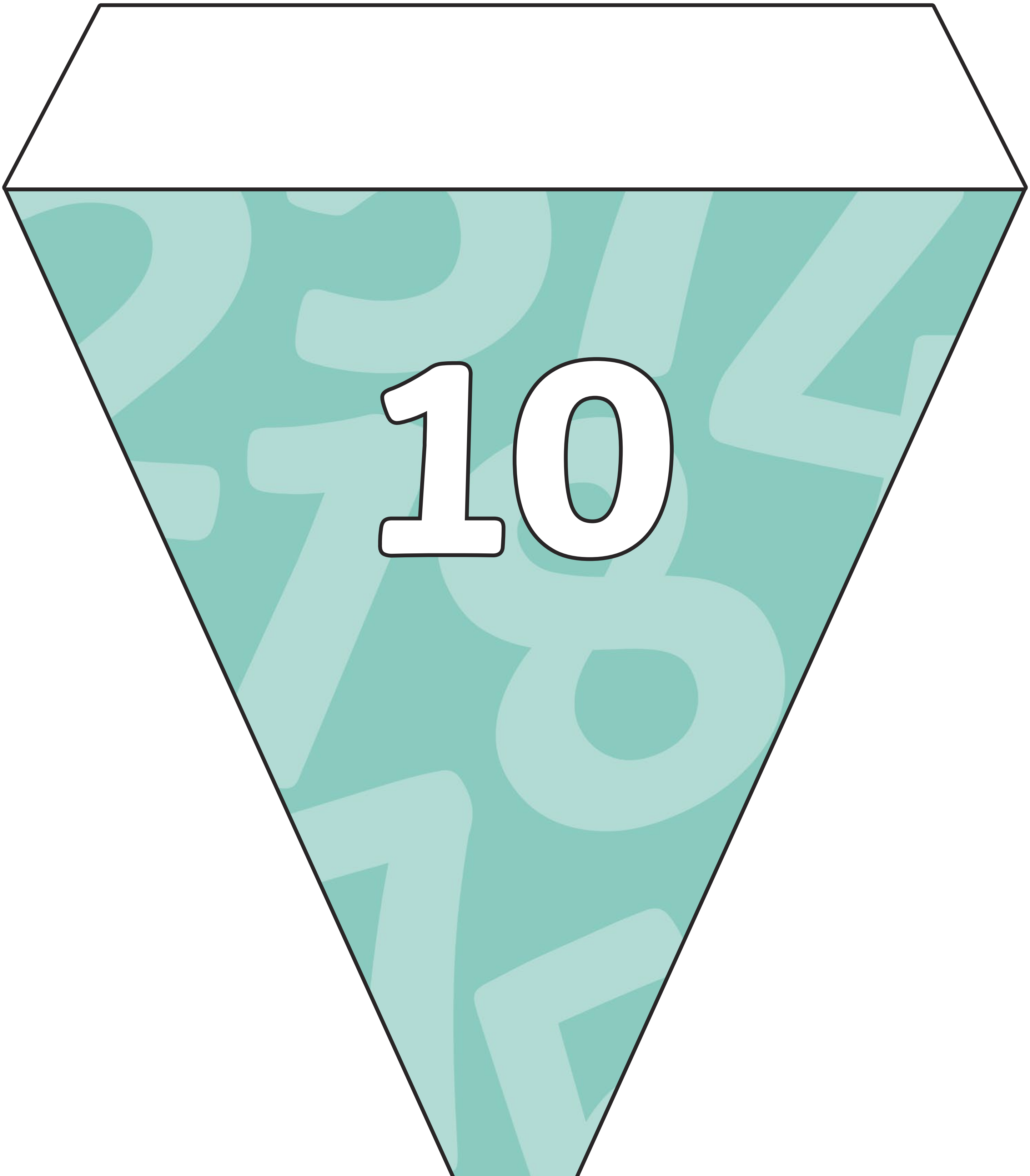
fold



fold

fold fold

fold



fold

fold

11

fold

fold

fold

12

fold fold

fold

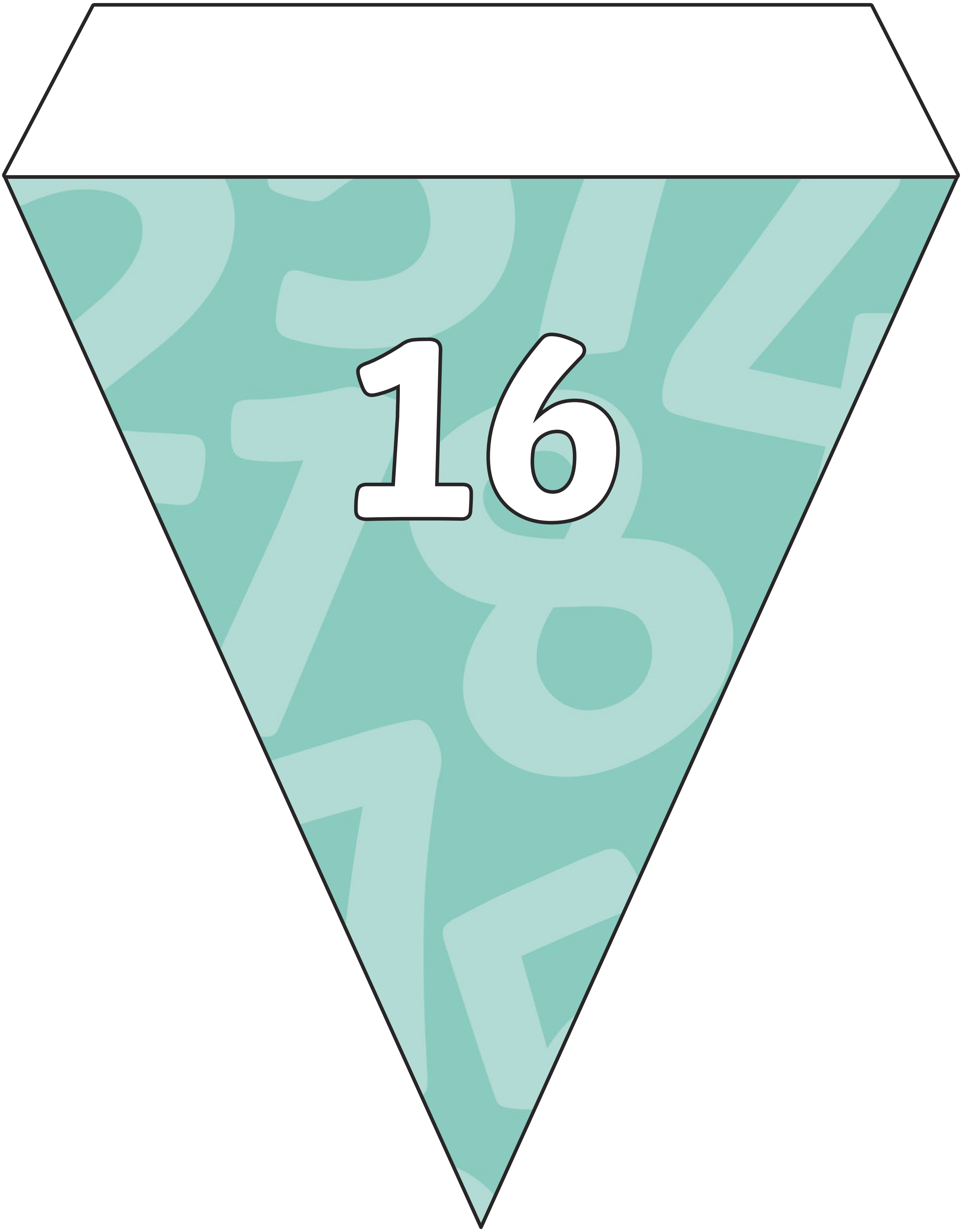
fold

14

fold

fold

fold



fold

fold  fold

fold

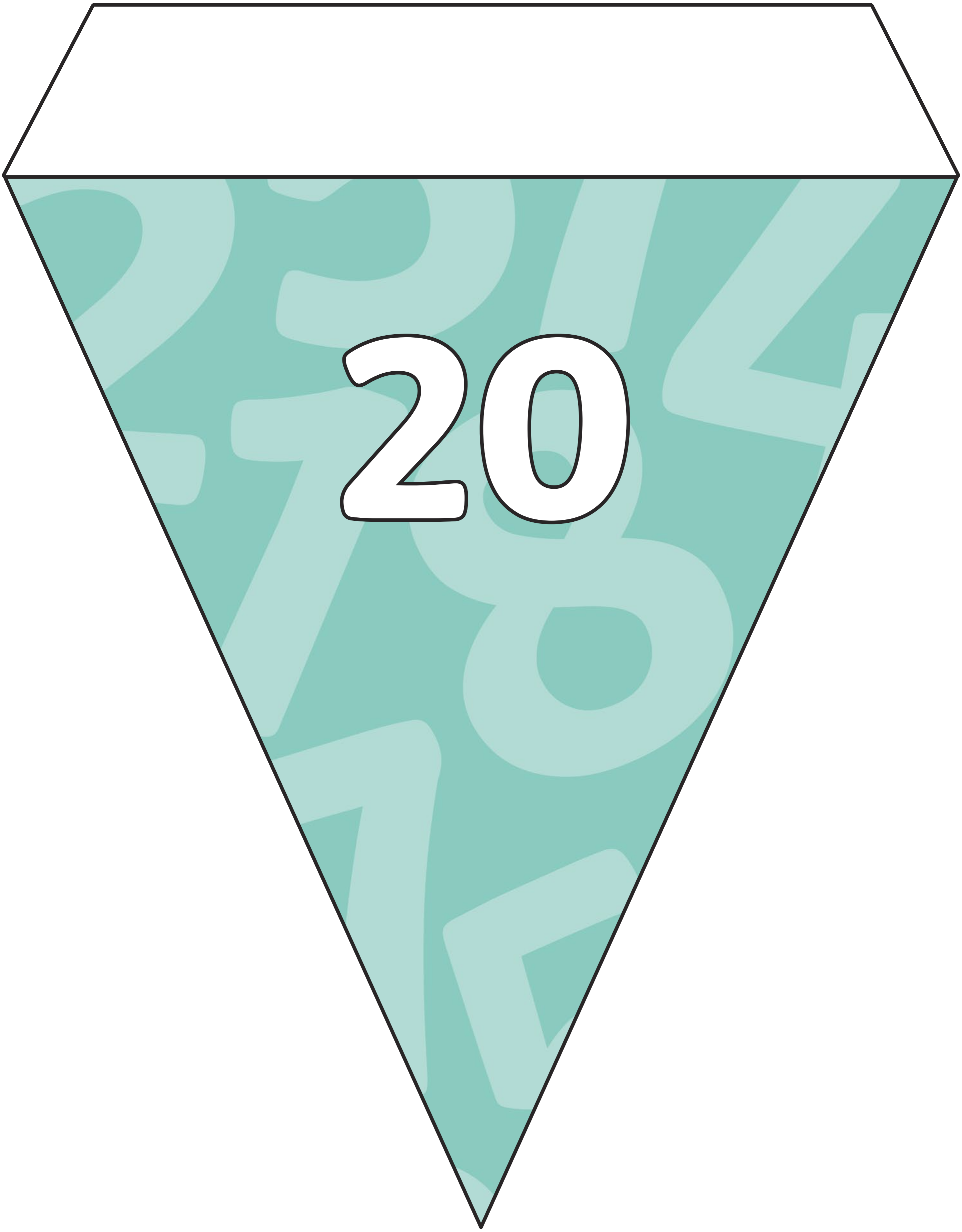
fold

18

fold

fold

fold fold



fold

21

fold

fold

fold

22

fold fold

fold fold

24

fold fold

25

fold

fold

26

fold fold

fold

fold

28

fold

fold

fold

fold

30

fold

fold

fold

32

fold

fold fold

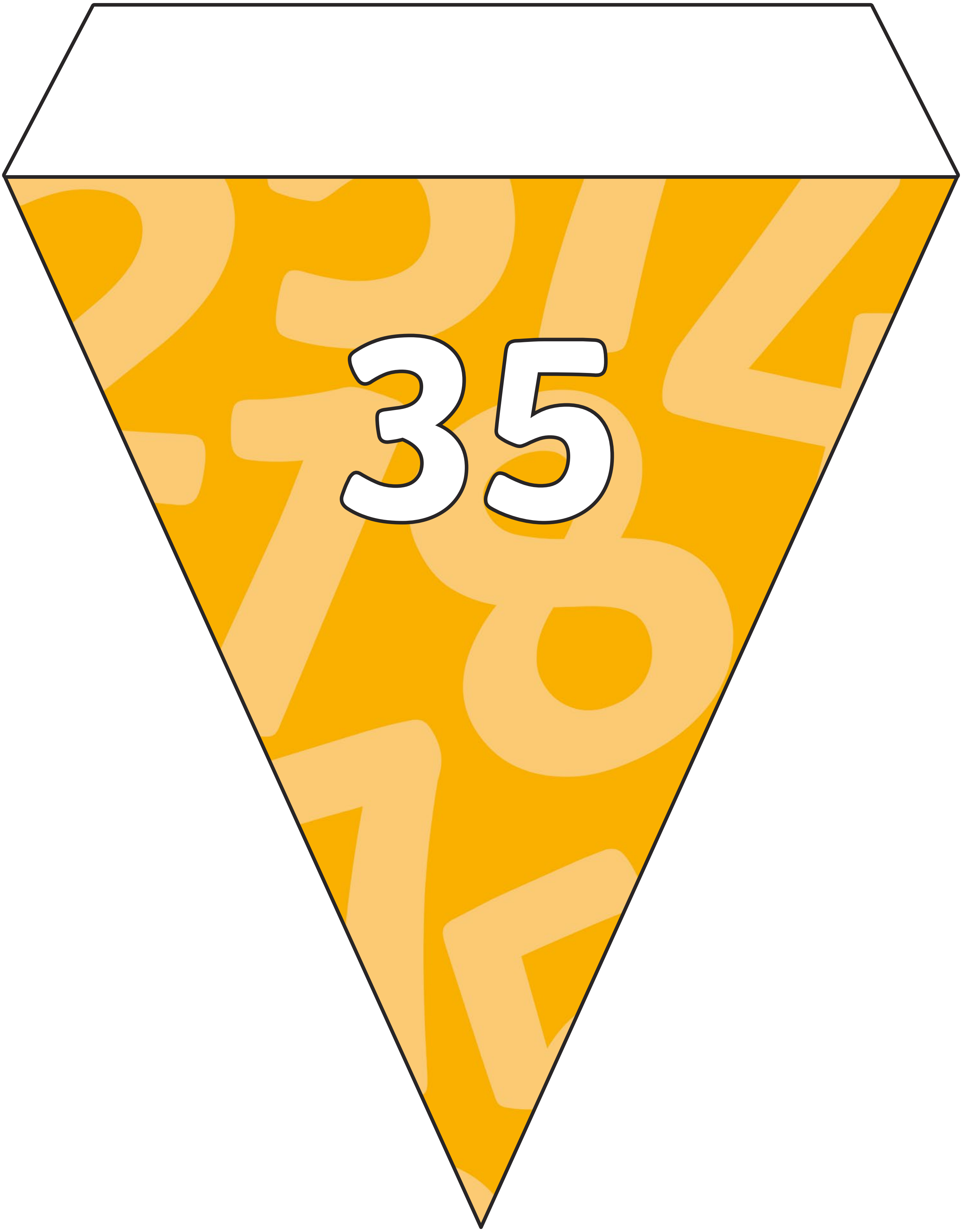
33

fold

fold

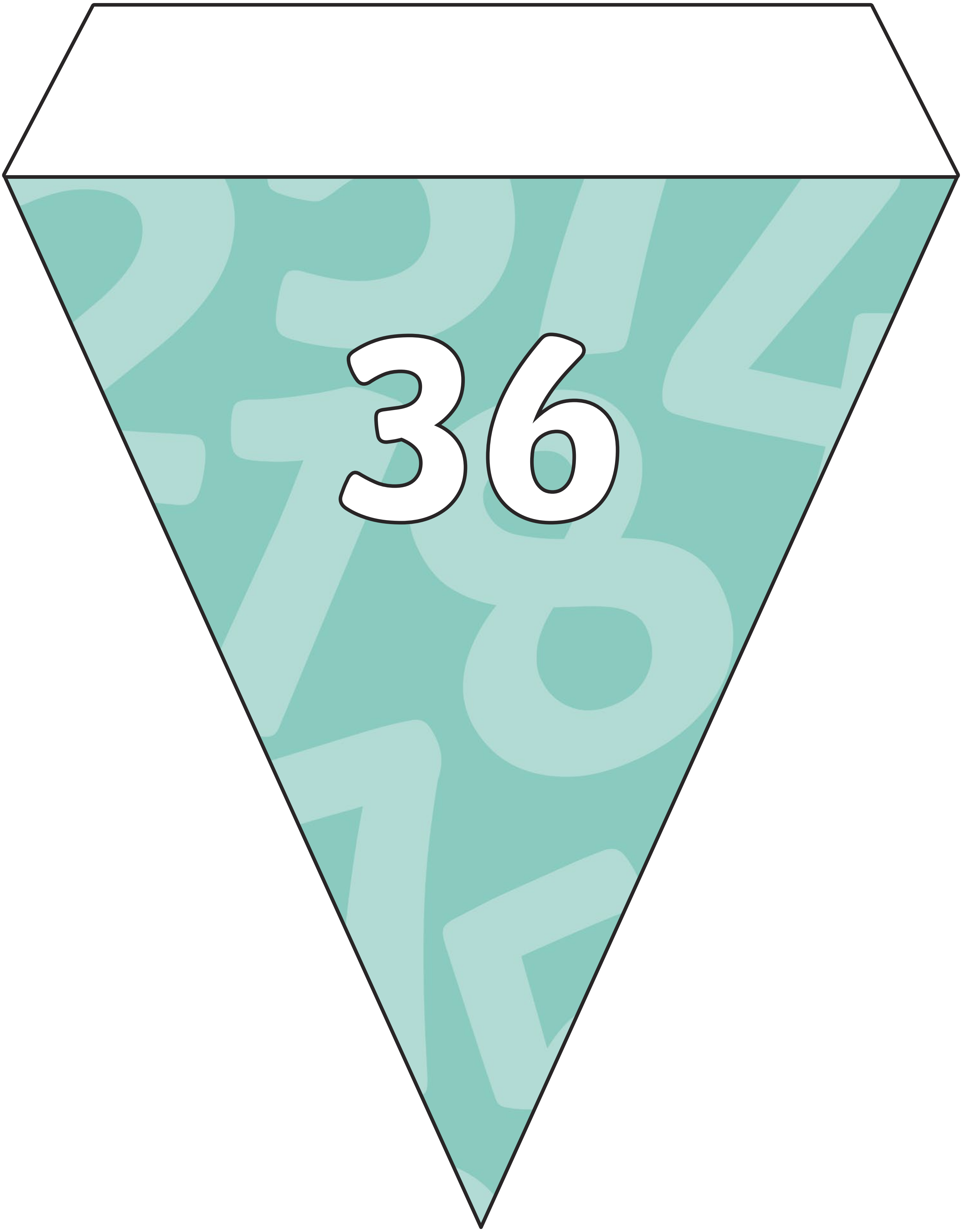
34

fold



fold

fold



fold

fold

fold

fold fold

38

fold

fold

fold

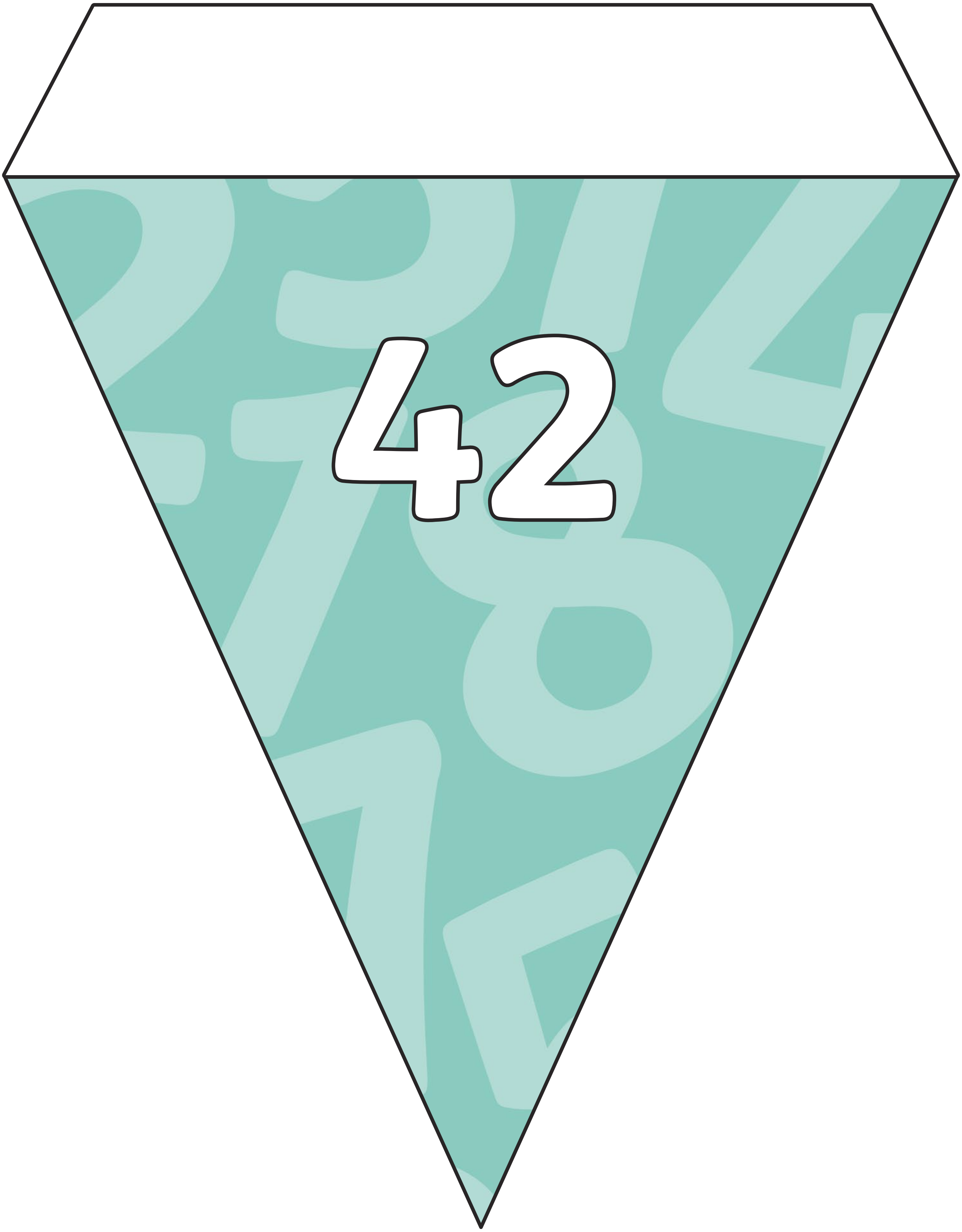
fold

40

fold

fold

fold



fold

fold

fold

43

fold fold

44

fold

45

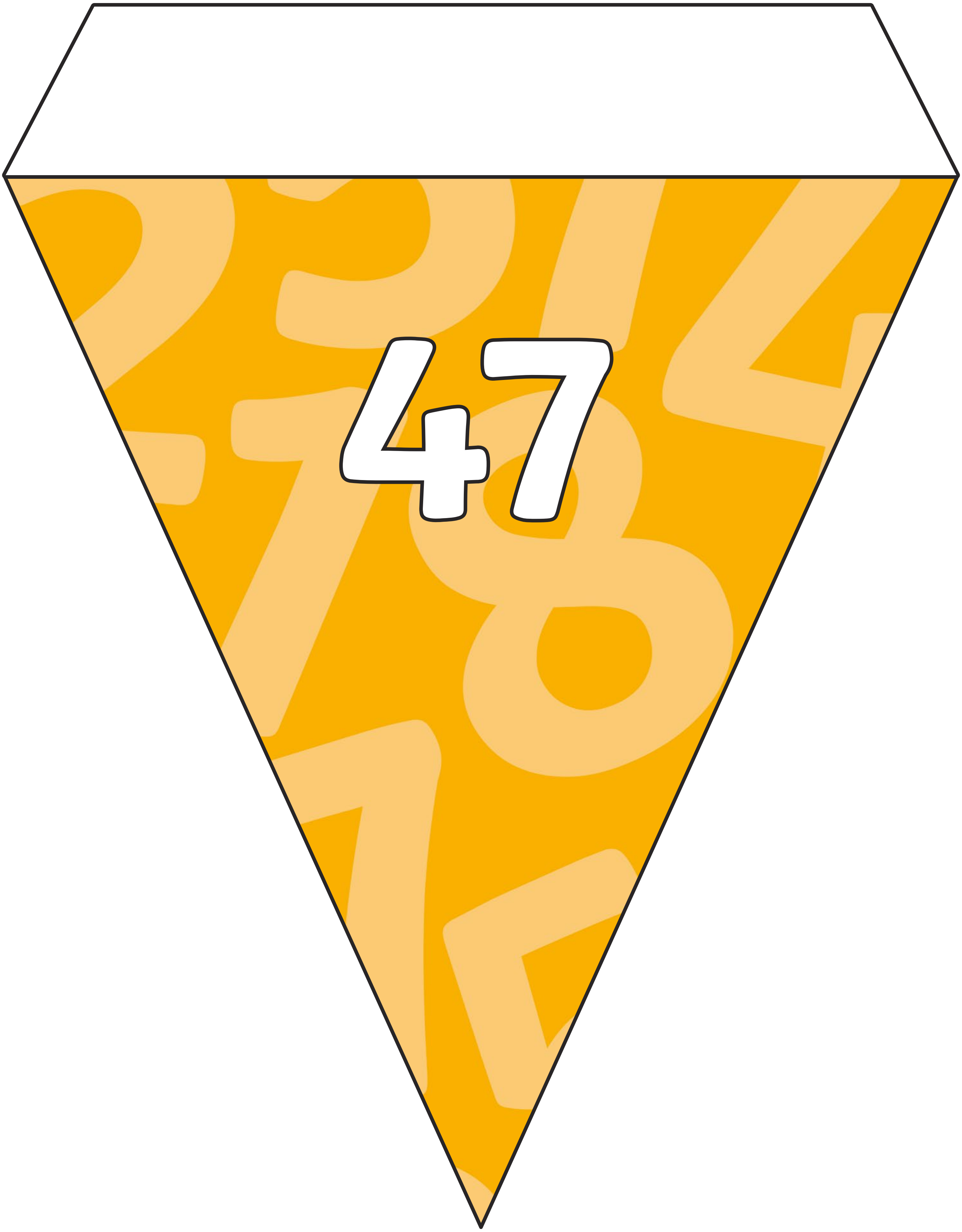
fold

fold

fold

46

fold fold



fold

fold

48

fold

fold

49

fold

fold

50

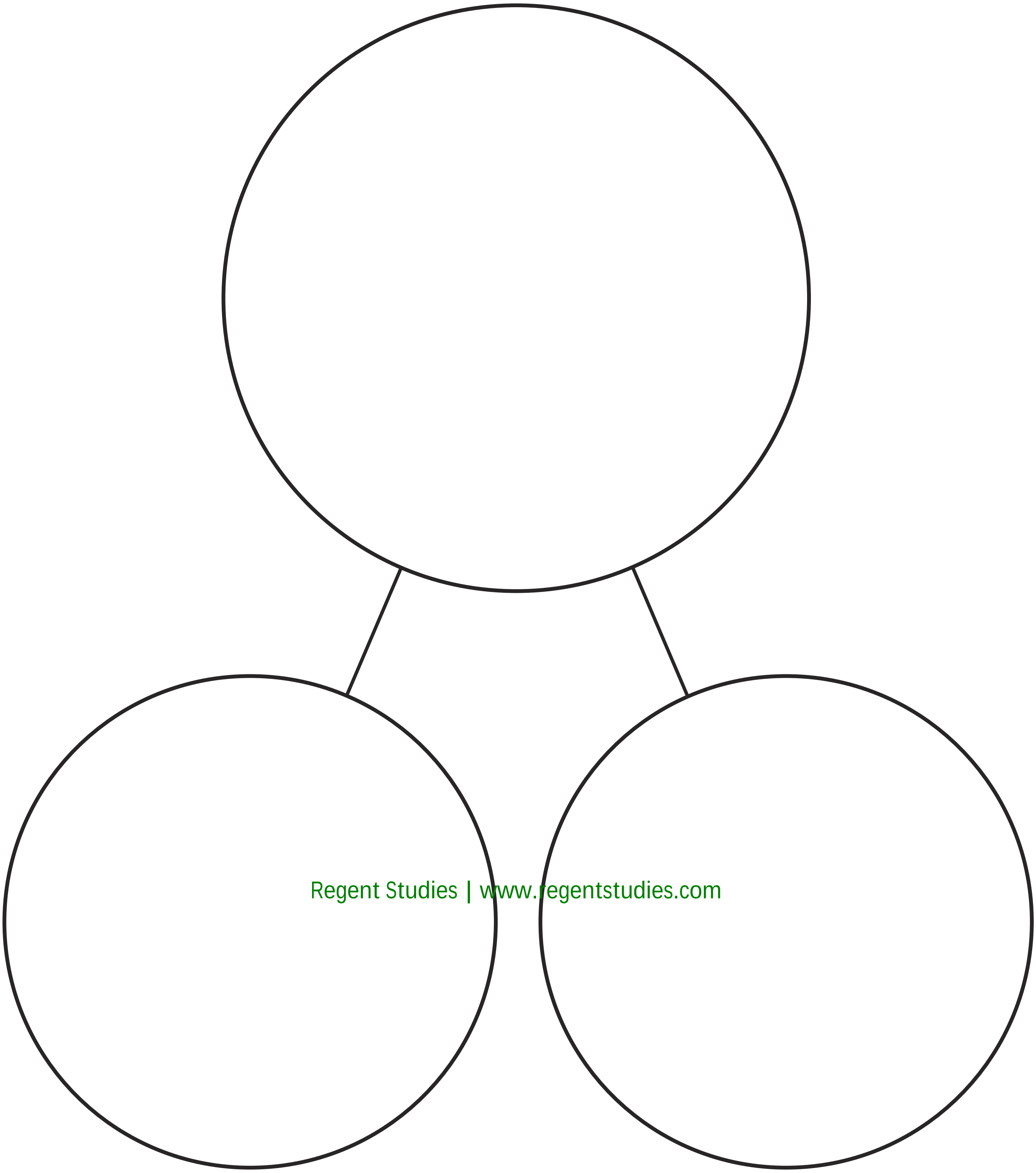
-19 to 150
Number Square

-19	-18	-17	-16	-15	-14	-13	-12	-11	-10
-9	-8	-7	-6	-5	-4	-3	-2	-1	0
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

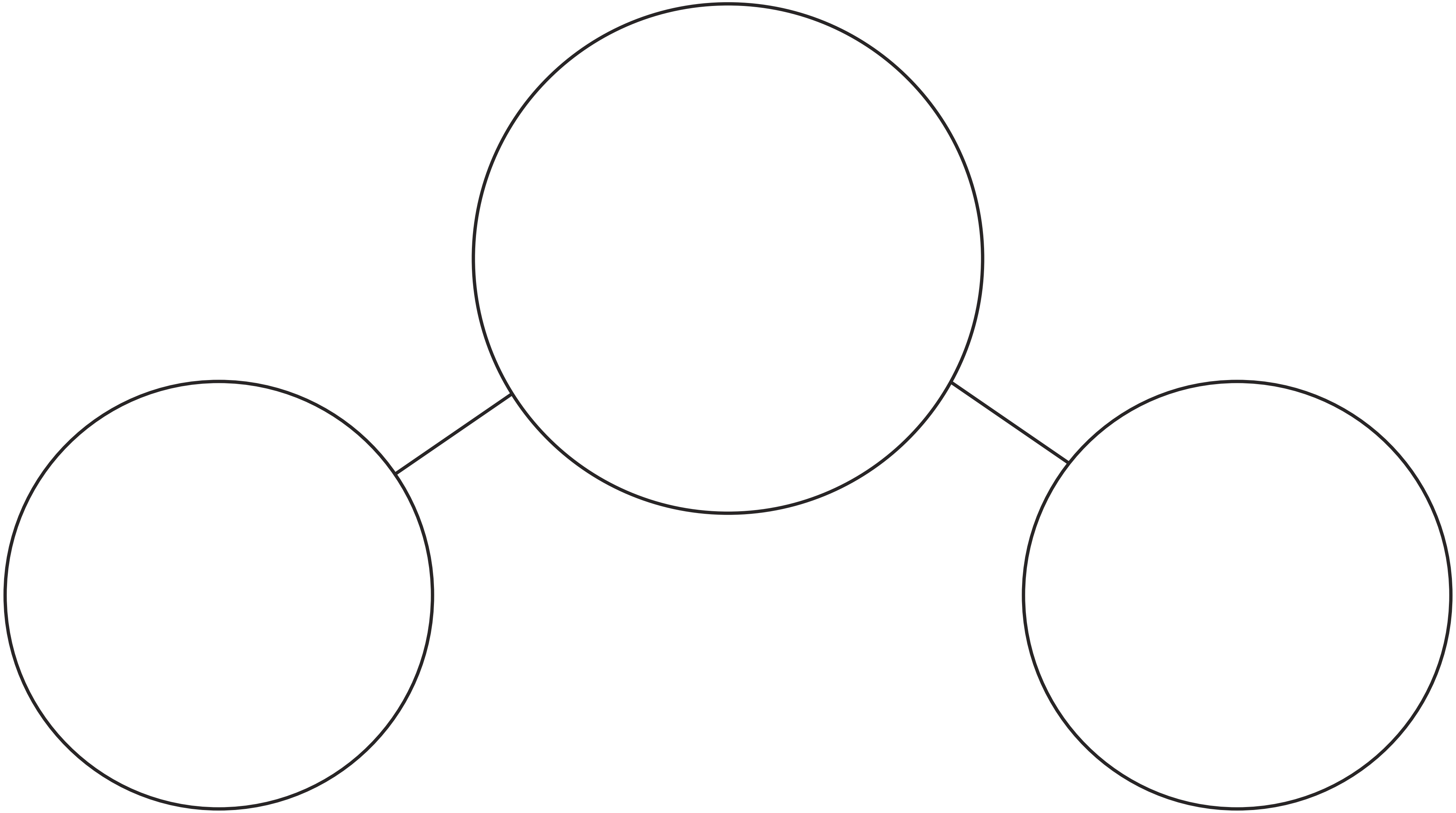
Fill In the Blanks
Number Square

									0
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

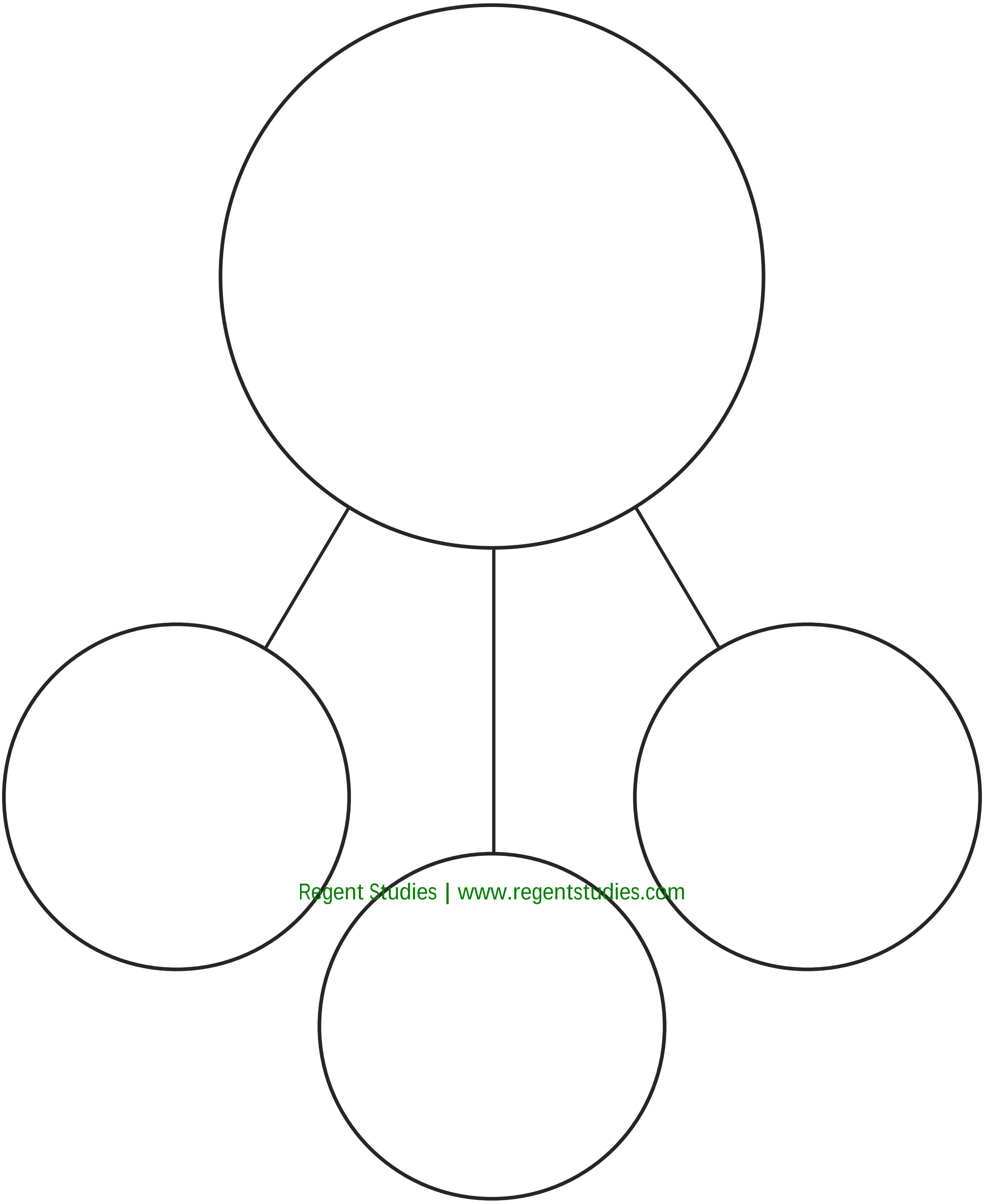
Part-Whole Model



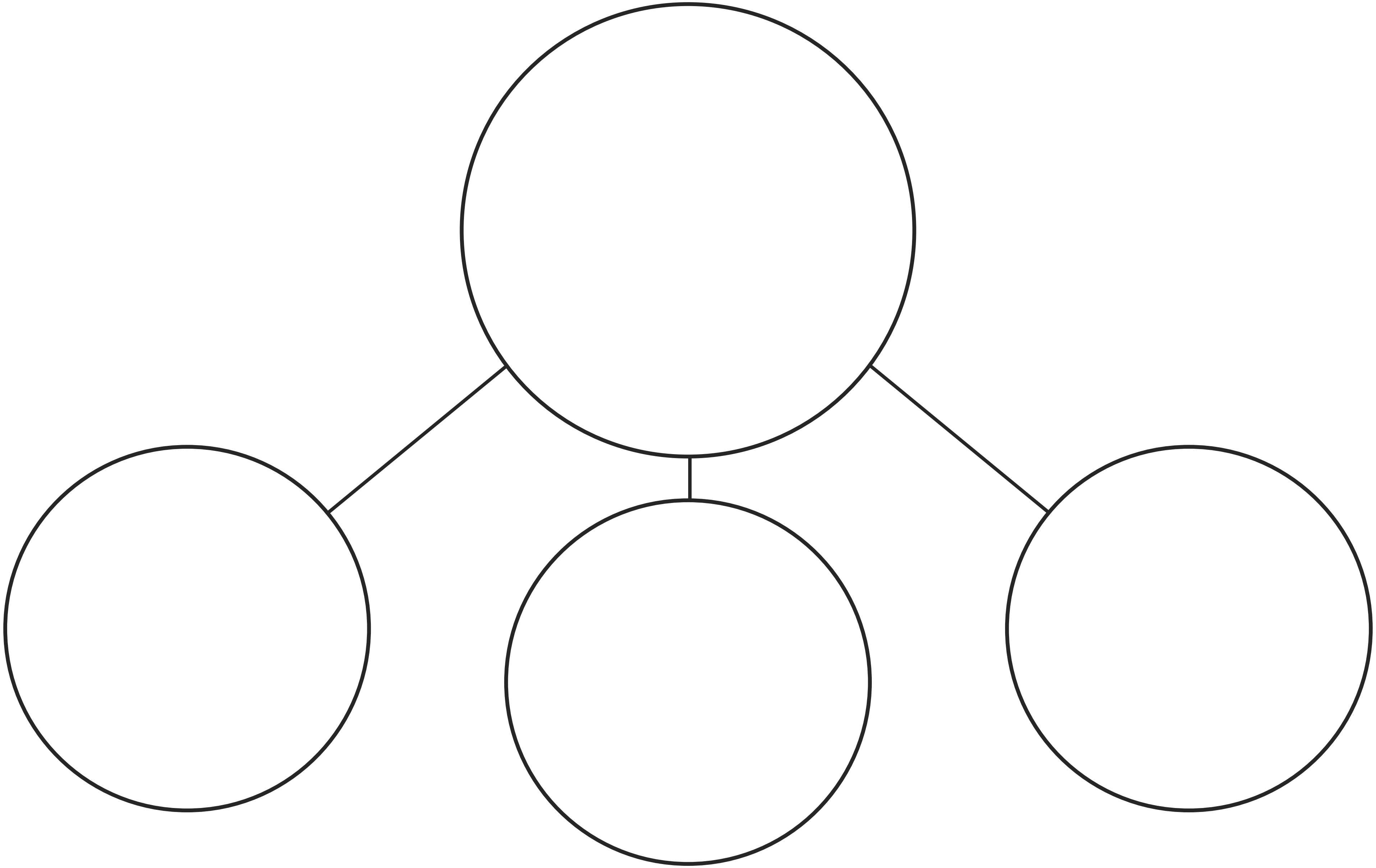
Part-Whole Model



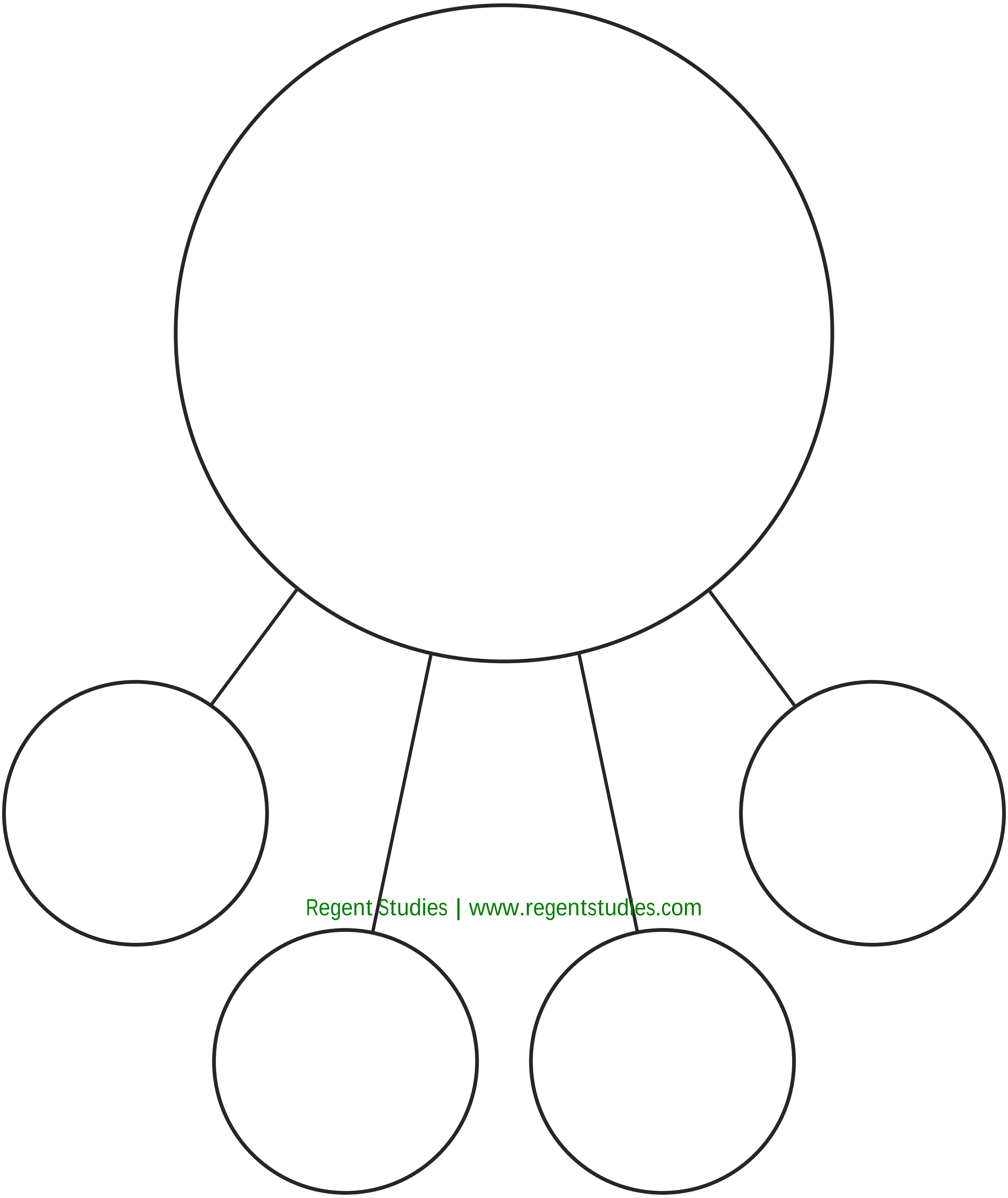
Part-Whole Model



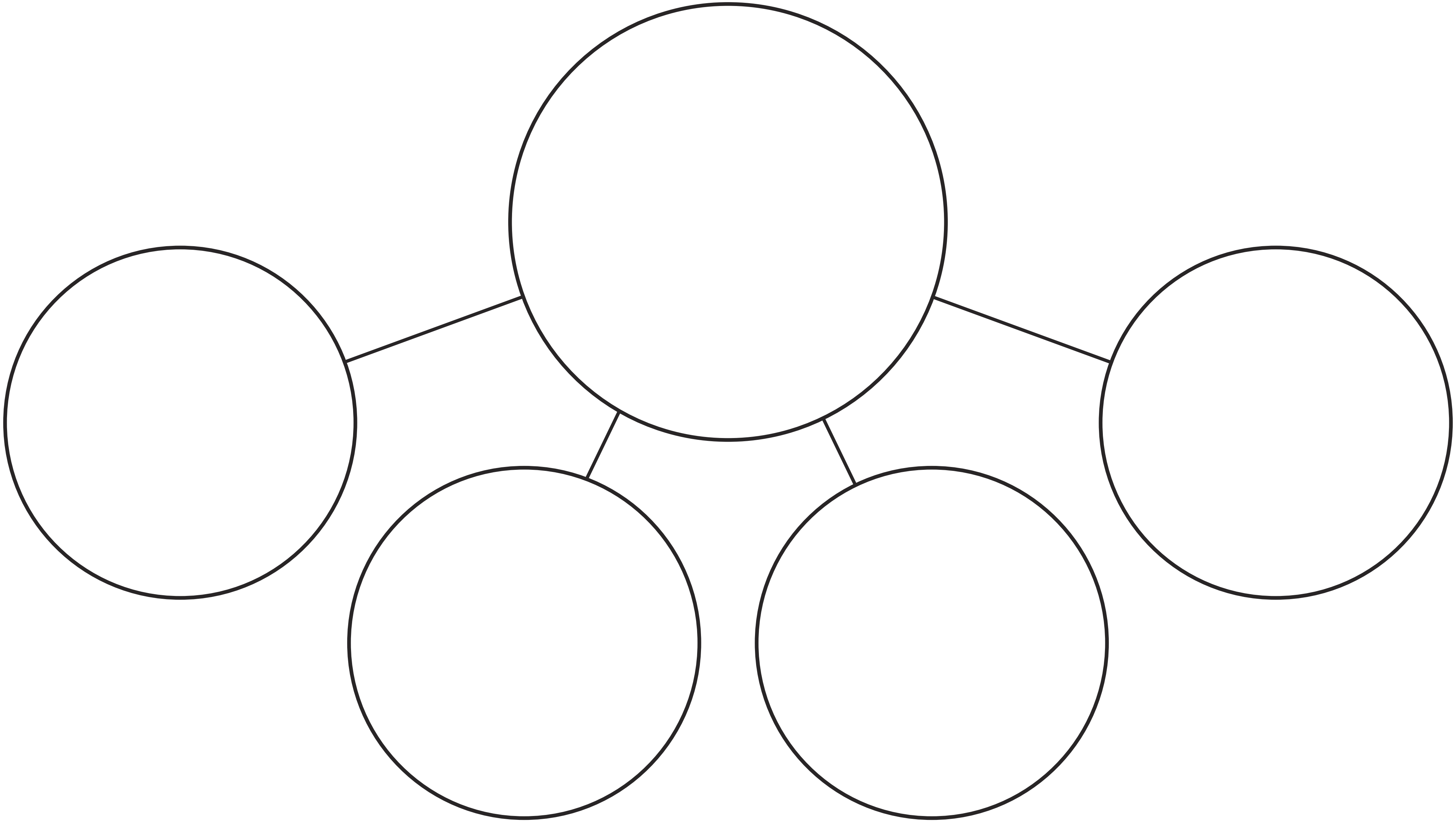
Part-Whole Model



Part-Whole Model

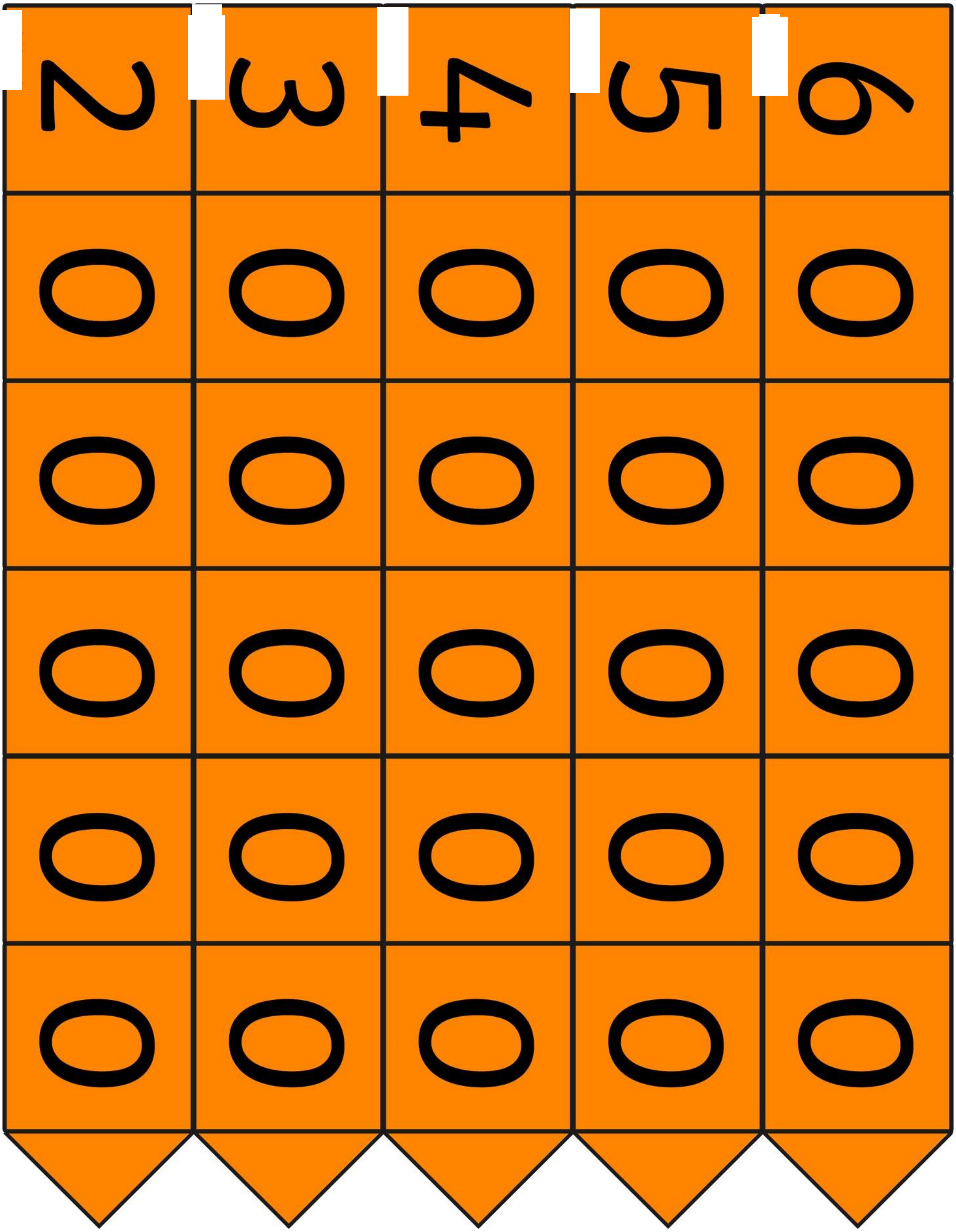


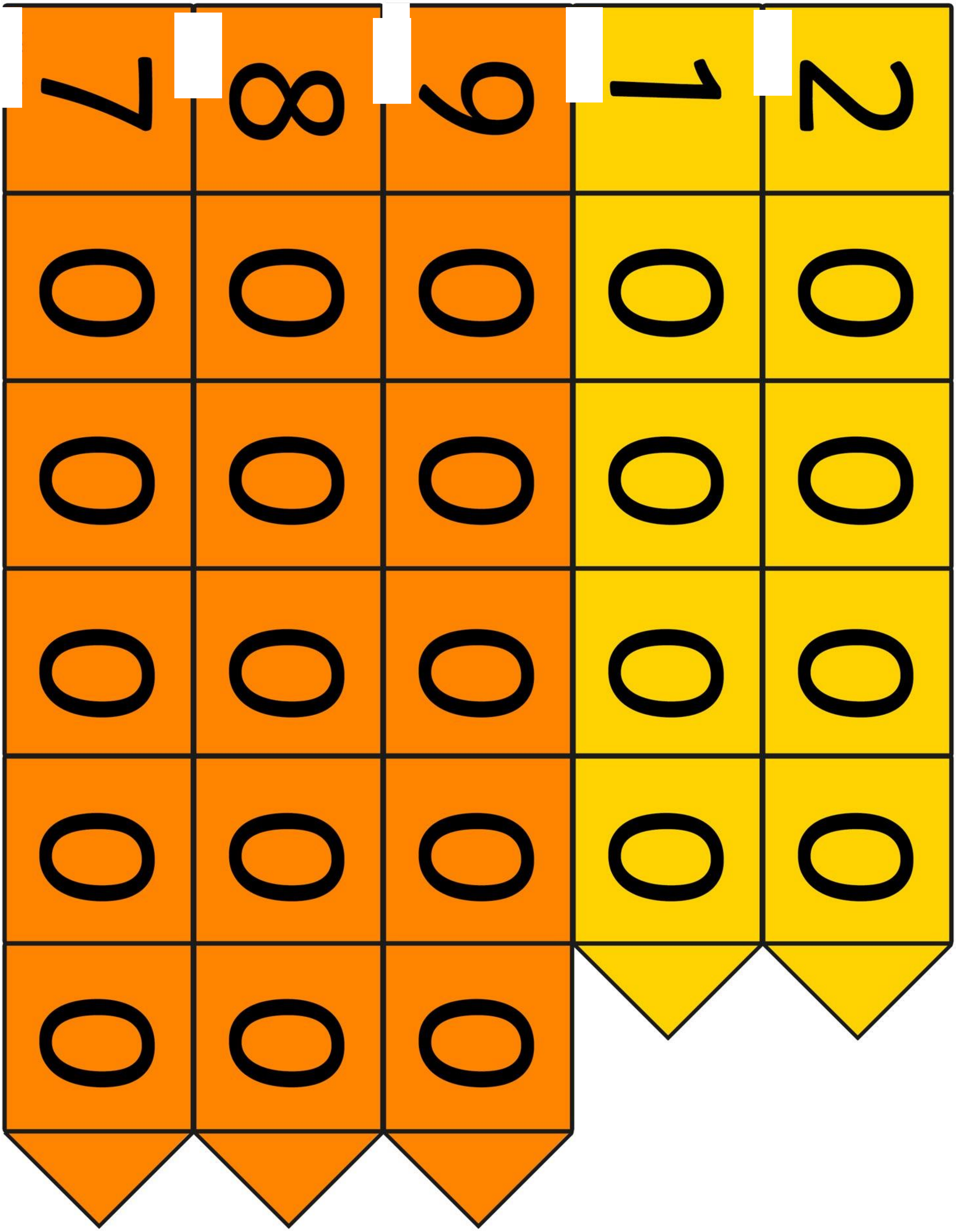
Part-Whole Model



5	0	0	0	0	0	0
4	0	0	0	0	0	0
3	0	0	0	0	0	0
2	0	0	0	0	0	0
1	0	0	0	0	0	0

1	0	0	0	0	0	
9	0	0	0	0	0	0
8	0	0	0	0	0	0
7	0	0	0	0	0	0
6	0	0	0	0	0	0


2000000
3000000
4000000
5000000
6000000


700000
800000
900000
10000
20000

3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0

1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0

8000

9000

100

200

300

400

500

600

700

800

900

10

20

30

40

50

60

70

80

90

1

6

2

7

3

8

4

9

5

5	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0

9	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0

Place Value

M Millions 1 000 000	Hth Hundred Thousands 100 000	Tth Ten Thousands 10 000	Th Thousands 1000	H Hundreds 100	T Tens 10	O Ones 1	t Tenths 0.1	h Hundredths 0.01	th Thousandths 0.001

Place Value

M Millions 1 000 000	Hth Hundred Thousands 100 000	Tth Ten Thousands 10 000	Th Thousands 1000	H Hundreds 100	T Tens 10	O Ones 1	t Tenths 0.1	h Hundredths 0.01	th Thousandths 0.001

Place Value

ones	tens	hundreds
1	10	100
thousands	ten thousands	hundred thousands
1 000	10 000	100 000
millions	ten millions	hundred millions
1 000 000	10 000 000	100 000 000
billions	tenths	hundredths
1 000 000 000	0.1	0.01
	thousandths	
	0.001	

ones

1

tens

10

hundreds

100

thousands

1 000

ten thousands

10 000

hundred thousands

100 000

millions

1 000 000

ten millions

10 000 000

hundred millions

100 000 000

billions

1 000 000 000

tenths

0.1

hundredths

0.01

thousandths

0.001

decimal point

.

Roman Numerals 1-1000

I	1 =	1
II	1 + 1 =	2
III	1 + 1 + 1 =	3
IV	5 - 1 =	4
V	5 =	5
VI	5 + 1 =	6
VII	5 + 1 + 1 =	7
VIII	5 + 1 + 1 + 1 =	8
IX	10 - 1 =	9
X	10 =	10
XI	10 + 1 =	11
XII	10 + 1 + 1 =	12
XIII	10 + 1 + 1 + 1 =	13
XIV	10 + (5 - 1) =	14
XV	10 + 5 =	15
XVI	10 + 5 + 1 =	16
XVII	10 + 5 + 1 + 1 =	17
XVIII	10 + 5 + 1 + 1 + 1 =	18
XIX	10 + (10 - 1) =	19
XX	10 + 10 =	20

Roman Numerals 1-1000

XXI	10 + 10 + 1 =	21
XXII	10 + 10 + 1 + 1 =	22
XXIII	10 + 10 + 1 + 1 + 1 =	23
XXIV	10 + 10 + (5 - 1) =	24
XXV	10 + 10 + 5 =	25
XXVI	10 + 10 + 5 + 1 =	26
XXVII	10 + 10 + 5 + 1 + 1 =	27
XXVIII	10 + 10 + 5 + 1 + 1 + 1 =	28
XXIX	10 + 10 + (10 - 1) =	29
XXX	10 + 10 + 10 =	30
XXXI	10 + 10 + 10 + 1 =	31
XXXII	10 + 10 + 10 + 1 + 1 =	32
XXXIII	10 + 10 + 10 + 1 + 1 + 1 =	33
XXXIV	10 + 10 + 10 + (5 - 1) =	34
XXXV	10 + 10 + 10 + 5 =	35
XXXVI	10 + 10 + 10 + 5 + 1 =	36
XXXVII	10 + 10 + 10 + 5 + 1 + 1 =	37
XXXVIII	10 + 10 + 10 + 5 + 1 + 1 + 1 =	38
XXXIX	10 + 10 + 10 + (10 - 1) =	39
XL	50 - 10 =	40

Roman Numerals 1-1000

XLI	(50 - 10) + 1 =	41
XLII	(50 - 10) + 1 + 1 =	42
XLIII	(50 - 10) + 1 + 1 + 1 =	43
XLIV	(50 - 10) + (5 - 1) =	44
XLV	(50 - 10) + 5 =	45
XLVI	(50 - 10) + 5 + 1 =	46
XLVII	(50 - 10) + 5 + 1 + 1 =	47
XLVIII	(50 - 10) + 5 + 1 + 1 + 1 =	48
XLIX	(50 - 10) + (10 - 1) =	49
L	50	50
LI	50 + 1 =	51
LII	50 + 1 + 1 =	52
LIII	50 + 1 + 1 + 1 =	53
LIV	50 + (5 - 1) =	54
LV	50 + 5 =	55
LVI	50 + 5 + 1 =	56
LVII	50 + 5 + 1 + 1 =	57
LVIII	50 + 5 + 1 + 1 + 1 =	58
LIX	50 + (10 - 1) =	59
LX	50 + 10 =	60

Roman Numerals 1-1000

LXI	50 + 10 + 1 =	61
LXII	50 + 10 + 1 + 1 =	62
LXIII	50 + 10 + 1 + 1 + 1 =	63
LXIV	50 + 10 + (5 - 1) =	64
LXV	50 + 10 + 5 =	65
LXVI	50 + 10 + 5 + 1 =	66
LXVII	50 + 10 + 5 + 1 + 1 =	67
LXVIII	50 + 10 + 5 + 1 + 1 + 1 =	68
LXIX	50 + 10 + (10 - 1) =	69
LXX	50 + 10 + 10 =	70
LXXI	50 + 10 + 10 + 1 =	71
LXXII	50 + 10 + 10 + 1 + 1 =	72
LXXIII	50 + 10 + 10 + 1 + 1 + 1 =	73
LXXIV	50 + 10 + 10 + (5 - 1) =	74
LXXV	50 + 10 + 10 + 5 =	75
LXXVI	50 + 10 + 10 + 5 + 1 =	76
LXXVII	50 + 10 + 10 + 5 + 1 + 1 =	77
LXXVIII	50 + 10 + 10 + 5 + 1 + 1 + 1 =	78
LXXIX	50 + 10 + 10 + (10 - 1) =	79
LXXX	50 + 10 + 10 + 10 =	80

Roman Numerals 1-1000

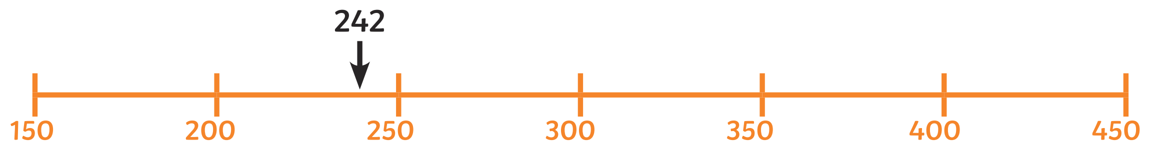
LXXXI	50 + 10 + 10 + 10 + 1 =	81
LXXXII	50 + 10 + 10 + 10 + 1 + 1 =	82
LXXXIII	50 + 10 + 10 + 10 + 1 + 1 + 1 =	83
LXXXIV	50 + 10 + 10 + 10 + (5 - 1) =	84
LXXXV	50 + 10 + 10 + 10 + 5 =	85
LXXXVI	50 + 10 + 10 + 10 + 5 + 1 =	86
LXXXVII	50 + 10 + 10 + 10 + 5 + 1 + 1 =	87
LXXXVIII	50 + 10 + 10 + 10 + 5 + 1 + 1 + 1 =	88
LXXXIX	50 + 10 + 10 + 10 + (10 - 1) =	89
XC	100 - 10 =	90
XCI	(100 - 10) + 1 =	91
XCII	(100 - 10) + 1 + 1 =	92
XCIII	(100 - 10) + 1 + 1 + 1 =	93
XCIV	(100 - 10) + (5 - 1) =	94
XCV	(100 - 10) + 5 =	95
XCVI	(100 - 10) + 5 + 1 =	96
XCVII	(100 - 10) + 5 + 1 + 1 =	97
XCVIII	(100 - 10) + 5 + 1 + 1 + 1 =	98
XCIX	(100 - 10) + (10 - 1) =	99
C	100 =	100
D	500 =	500
M	1000 =	1000

Rounding Numbers

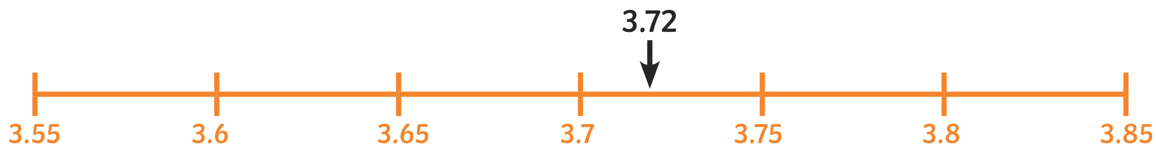
Rounded numbers are easier to work with but they are only approximate so not as accurate.

Rounding using a number line

You can use a number line to work out whether you need to round up or down. 242 rounded to the nearest hundred is 200 as it is closer to 200 when you put it on the number line.



The same rule applies when rounding decimal places. 3.72 rounded to one decimal place is 3.7. The number line clearly shows 3.72 is closer to 3.7 than 3.8.



When rounding decimal places, only consider the numbers after the decimal point.

Rounding without a number line

Without a number line, you can round up by looking at the digit in the place value column to the right of the one you are rounding to.

8.38619 = 8.4 to one decimal place

8.38619 = 8.39 to two decimal places

8.38619 = 8.386 to three decimal places

Text

Text

Text

Text

Text

Text

Text

Text

Text

Text

Text

Text

compare

order

round

one

ten

hundred

thousand

hundred thousand

million

negative

zero

digit

partition

place value

greater than

less than

sequence

increase

term

rule

between

minus

number line

interval

Roman numeral

decrease

Number and Place Value

one	ten	hundred	thousand	hundred thousand
million	zero	place value	compare	order
round	negative	digit	partition	greater than
less than	sequence	increase	term	rule
between	minus	number line	interval	Roman numeral
	power	decrease	index	