

Woosh Yáx Yaa Datúwch
Tlingit Math Book



Woosh Yáx Yaa Datúwch Tlingit Math Book

Gaawt'akaan Hi Sgoon
Sgóonwaanch Kawshixít
Yakwxwaan Tláach Koo Wlitúw

by the students of Hoonah High School
under the direction of Katherine Mills
Instructor of Tlingit

Acknowledgments

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First edition: June 1973, 1000 copies

Printed at Sheldon Jackson College, Sitka, Alaska during the third annual Tlingit Workshop

Second edition:

Edited, with new material by Jackie Kookesh, Nora Marks Dauenhauer, and Richard Dauenhauer.

Book design and illustrations by Jackie Kookesh.

Typesetting and production assistance by Michael D. Travis.

A project of the Alaska Federation of Natives, Alaska Rural Systemic Initiative, through contract to Sealaska Heritage Foundation;
funded with grant support from the National Science Foundation.

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First edition, June 1973.

Second edition, revised, March 1997.

Biography of Katherine Mills

Katherine Brown Mills / Yakw̄xwaan Tláa

Raven, T'ākdeintaan

Kaa Shaayi Hít

(Head House, an extension of Tax' Hít, Snail House)

Kaagwaantaan yádi (Child of Kaagwaantaan)

Kookhittaam yádi (Child of the Box House)

June 5, 1915 – August 16, 1993

Katherine Mills was born to Paul Brown and Mary Sarabia on June 5, 1915, at PAF Cannery at the end of Excursion Inlet, in what is now Glacier Bay National Park, up the bay from the present day location of Excursion Inlet Packing. Her Tlingit name was Yakw̄xwaan Tláa. She was born into the Raven moiety, the T'ākdeintaan clan, and the Kaa Shaayi Hít (Head House, an extension of Tax' Hít, Snail House). Through her father's line she was Kaagwaantaan yádi (Child of Kaagwaantaan) and Kookhittaam yádi (Child of the Box House). Her siblings include Irene Lampe of Juneau, Robert Sarabia of Seward, the late Edward Sarabia of Juneau, and the late Susan Belarde of Anchorage.

All her life Katherine and her family lived off the land. From early childhood she gathered nagoon berries, strawberries, and soapberries at Dundas Bay, and seagull eggs at Glacier Bay. She attended what was then the Hoonah Territorial School, and later went to Sheldon Jackson High School in Sitka.

On April, 11, 1936, Katherine married Gilbert Mills Sr. in Hoonah. The couple raised a large family. Katherine was a cannery worker for sixty-two years before retiring. In her spare

time she enjoyed berry picking, fishing, and smoking fish with her grandchildren.

Katherine was involved in the Tlingit Language movement from the very beginning. She taught Tlingit language and culture in the Hoonah public schools for many years. During the course of her teaching, she composed many materials for classroom use. Of these, the best known is her *Tlingit Math Book*, published in 1973 by Tlingit Readers, Inc., and which has remained popular over the years. She participated in the first Tlingit Language Workshop at Sheldon Jackson College in 1971, as well as in subsequent workshops. Her *Tlingit Math Book* was published during the third such workshop. Along with Andrew Hope III, and Nora and Richard Dauenhauer, and the late Henry Davis, Katherine was a founder of Tlingit Readers, Inc., and served as a charter member of the Board of Directors.

In the 1980s she collaborated with Wally and Marie Olson on a bilingual pamphlet called "Tlingit Thinking / Lingit Tundataanee," published by Southeast Alaska Regional Health Corporation. In addition, she made many contributions to the Sealaska Heritage Foundation. She was active in one of

the Foundation's very first transcription and translation projects and she also served as a charter member of the Elders Advisory Council. Among her still unpublished works are a short play in Tlingit and English based on the Eagle Boy legend, and a Tlingit translation of *Cannery Kid*, a book written by her grandson Gus.

Katherine was a gifted story teller, and several of her Raven stories are forthcoming in a volume by Sealaska Heritage Foundation edited by Nora and Richard Dauenhauer. Her stories were also among the inspirations for the plays written by Nora Marks Dauenhauer and performed internationally by the Naa Kahídi Theater. Her style for Raven stories was characterized by a classic "dead pan" tone of voice contrasting with the outrageous antics of Raven underway in the stories. Her English versions were characterized by unexpected choice of vocabulary. She was one of the funniest Raven story tellers among the Tlingit tradition bearers.

In contrast to her record of achievement, Katherine was a very quiet person, so low-key and low-profile as to be easily overlooked by outsiders. This is a traditional Native virtue, and causes one to reflect on the proverbs about "not beating your own drum" and "the empty barrel rattles the most."

In 1971, Katherine and several other women formed the Mount Fairweather Dance group and Katherine was named president. The group went on many tours, and was famous for its performances of the countless Hoonah "love songs."



Katherine Mills and Nora Marks Dauenhauer, June 1974, on Sheldon Jackson College campus, Sitka, for Tlingit Language Workshop. The *Tlingit Math Book* was printed during the 1973 Tlingit Language Workshop. Photo by R. Dauenhauer.



Katherine Mills, June 1974. Photo by R. Dauenhauer.

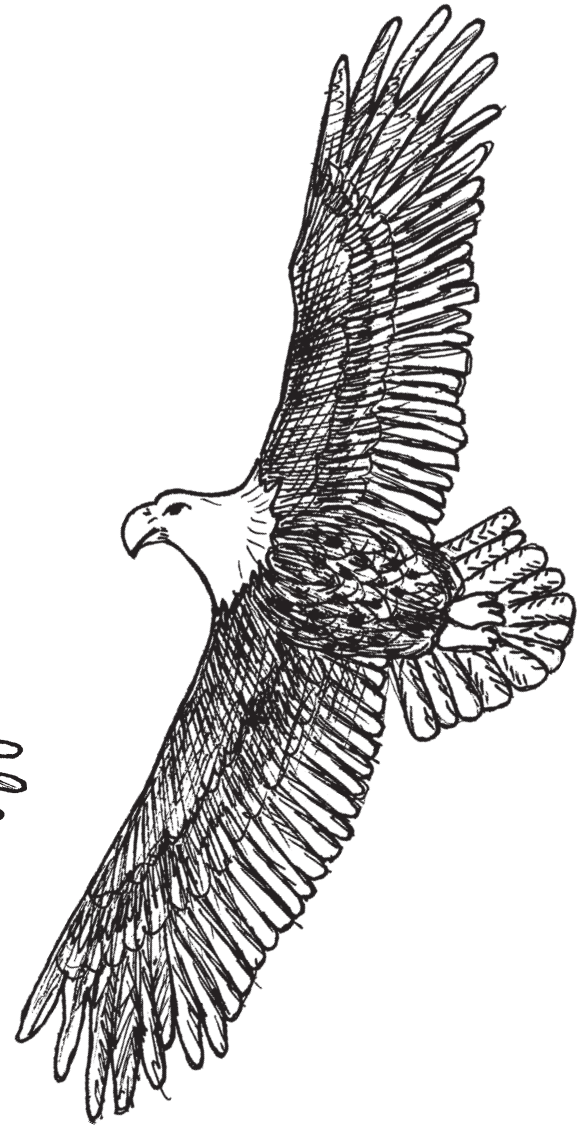
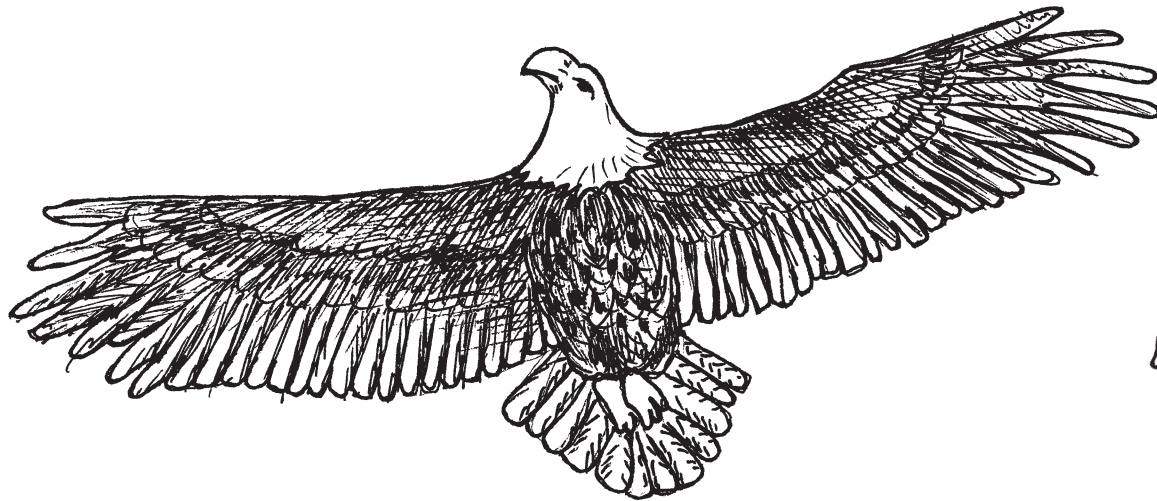
Katherine was a lifetime member of Hoonah Alaska Native Sisterhood Camp No. 12, serving as president for many years and as a convention delegate. She was also a Tlingit and Haida convention delegate and served on the Hoonah city council. She was a lifelong member of the Russian Orthodox Church.

In later life, she developed increased difficulty in walking, and her children got her an electric wheelchair. Despite her difficulties, she remained active and traveled widely, and served as an elder and consultant to museum projects in Seattle and Portland. In July 1991, she was one of the Southeast Alaska performers at the Festival of American Folklife on the National Mall in Washington, D.C. where she sang from her wheelchair and told traditional stories.

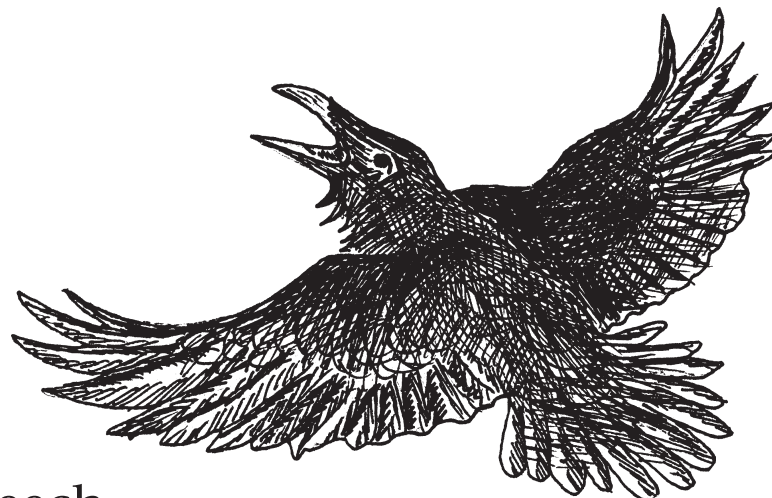
Katherine died on August 16, 1993, and after requiem services in Hoonah, she was escorted by a convoy of the largest seineboats of the Hoonah fishing fleet to the traditional burial site at the end of Excursion Inlet. Her daughter Phyllis Mills Bean and her son Gilbert "Butch" Mills Jr. preceded her in death, but she was survived by daughters Eleanor Moritz, Judith Brown, and Kathy Marvin, all of Hoonah, and Rosemary Jimboy of Lawrence, Kansas; sons Anthony, George, Thomas, Patrick, Christopher, Stuart, and Jeffrey, all of Hoonah, and Michael of Juneau. At the time of her death, she had forty-two grandchildren and twelve great-grandchildren. Her husband, Gilbert, passed away in December 1996. Pat Mills expressed the family's grief at their father's passing, but took comfort in his faith that, "They'll be together for Christmas."

Two eagles and three ravens were flying.

How many were there all together?



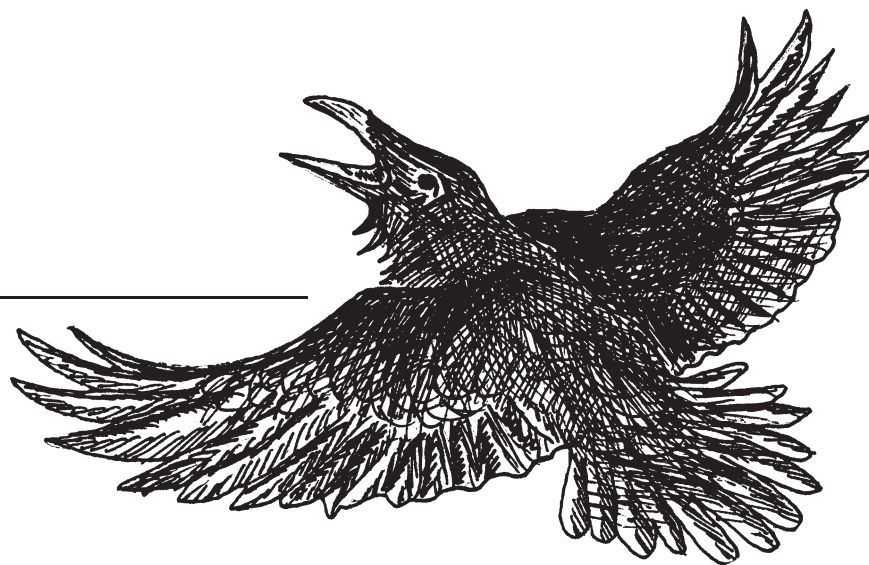
one 1



Déix ch'áak' ka nás'k yéil át kawdliyeech.

X'oon sáwé tle wóoshteen?

_____ + _____ = _____



tléix'

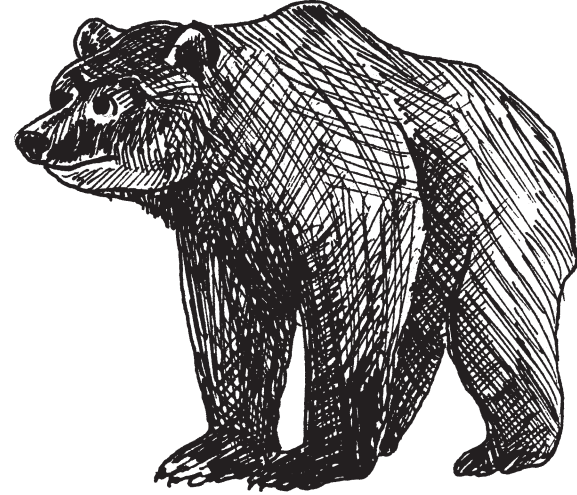
Three brown bears were walking along.

A man shot one.

How many were left?



two 2



Nás'k xóots át woo.aat.

Tléix' yú káach aa oowa.ún.

X'oon sá áa woonex?

_____ - _____ = _____

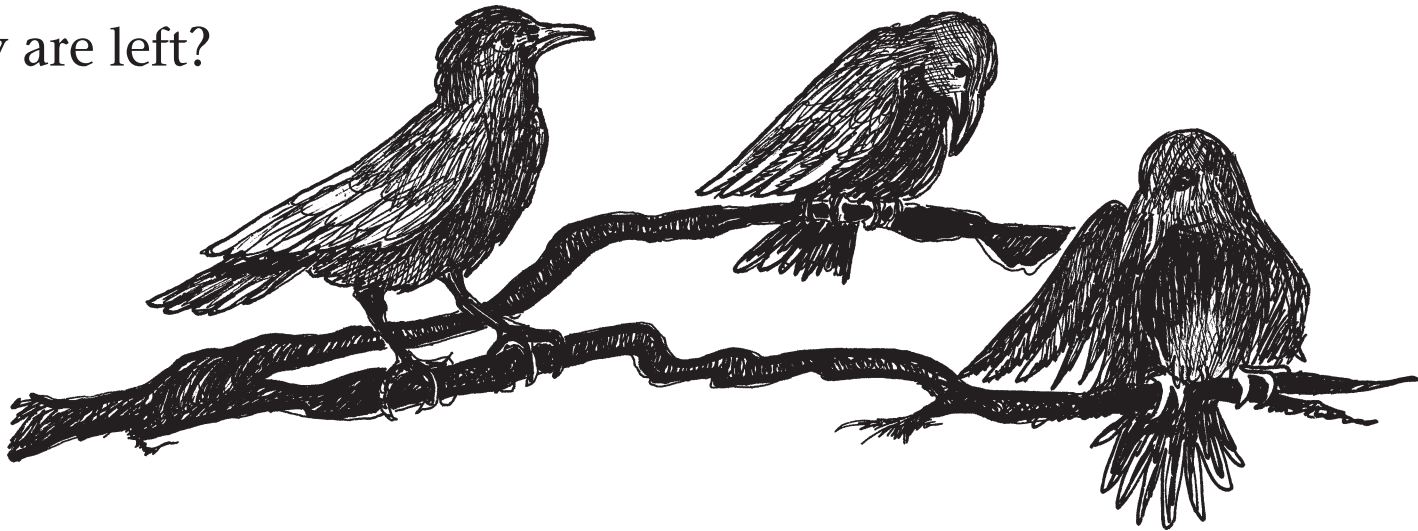


déix

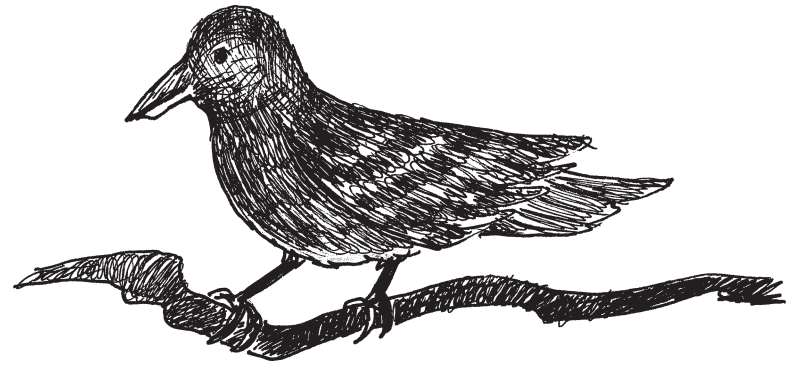
Five birds are sitting.

Four flew away.

How many are left?



three 3

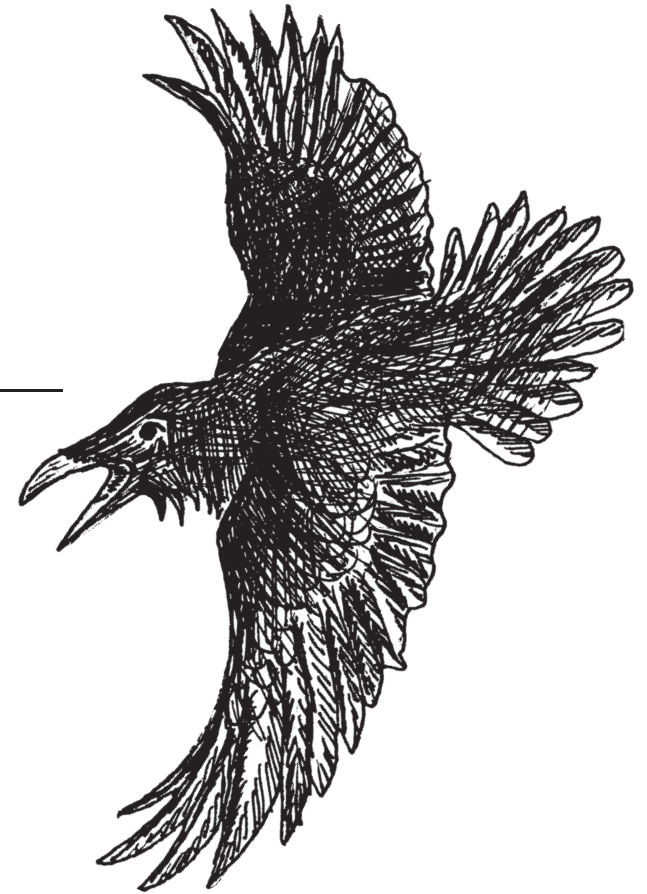


Keijín ts'ítskw át kéen.

Daax'oon aax kawdliyeech.

Wáa yakugei sá áwu?

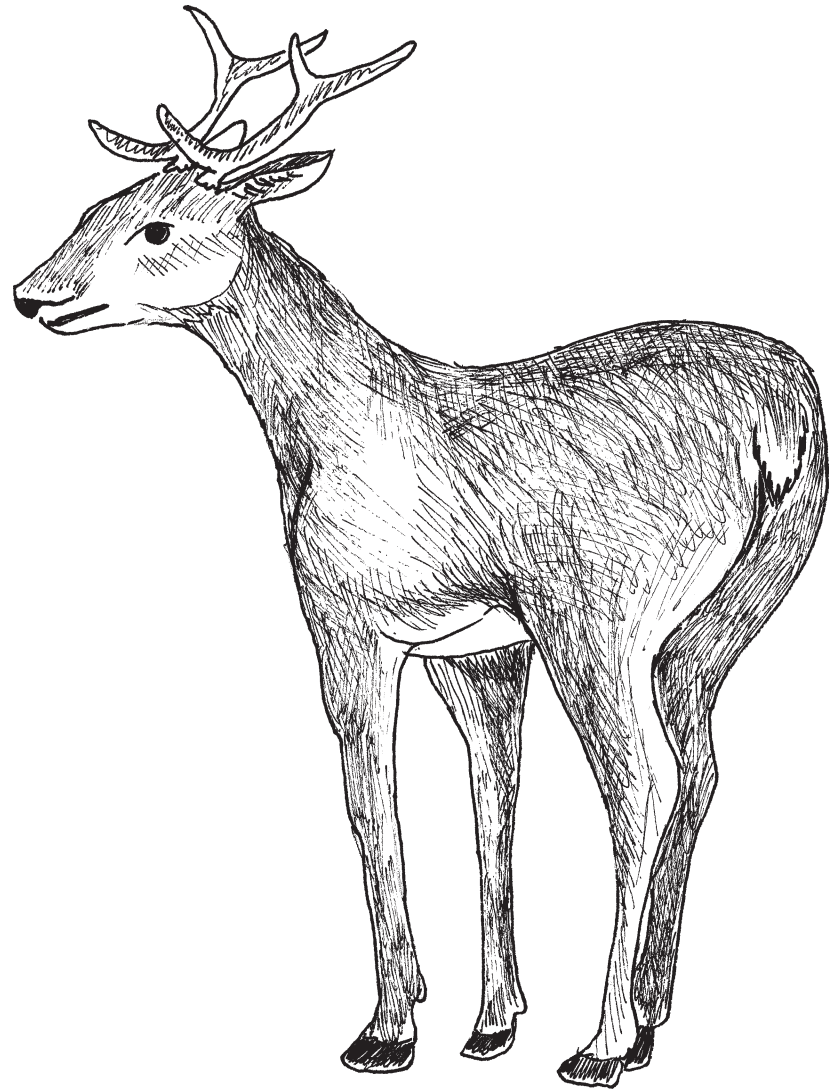
_____ - _____ = _____



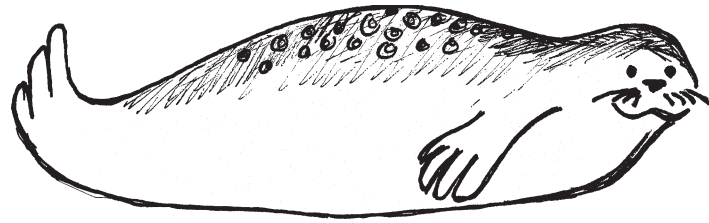
nás'k

A man shot two seals
and two deer.

How many animals did he shoot?



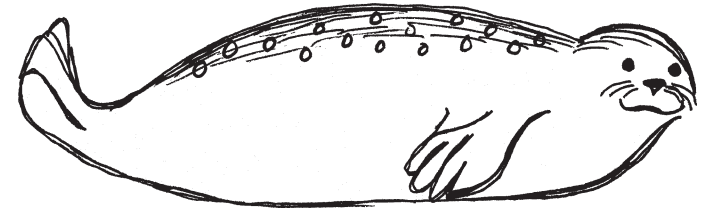
four 4



Déix tsaa aawa.ún

ká déix guwakaan.

X'oon yateeyi át sá aawa.ún?



_____ + _____ = _____

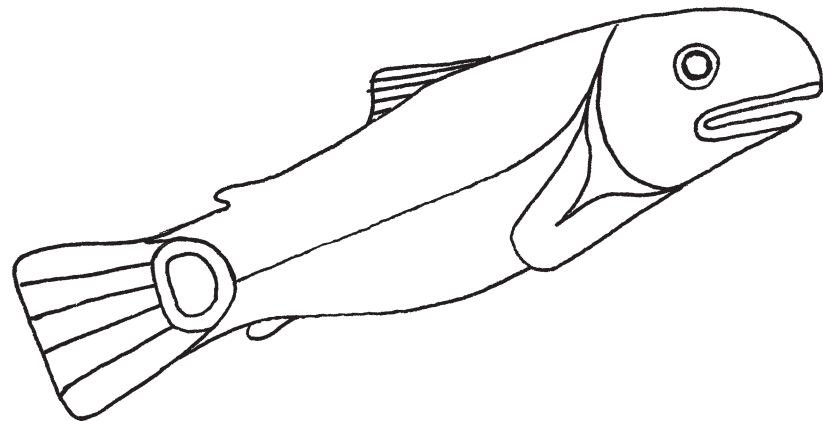
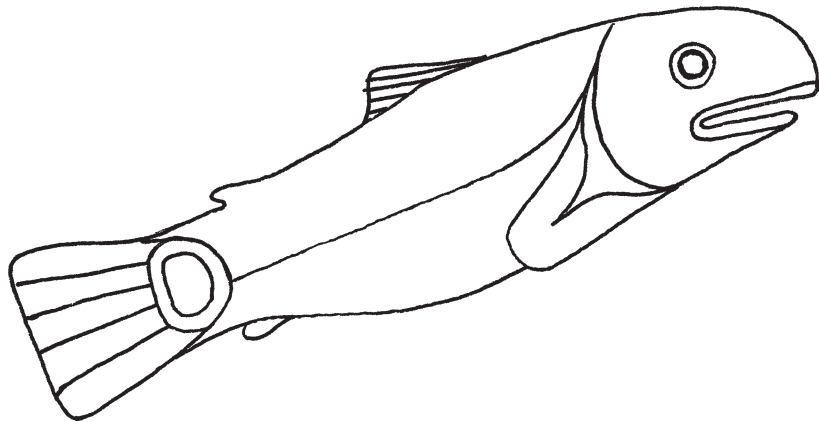
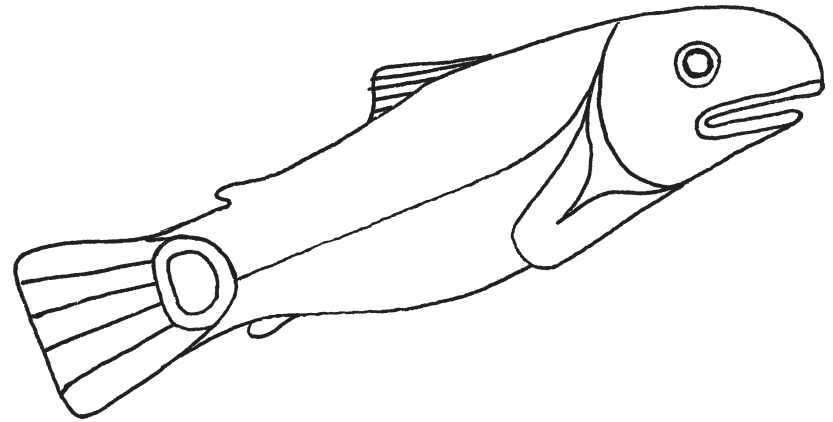


daax'oon

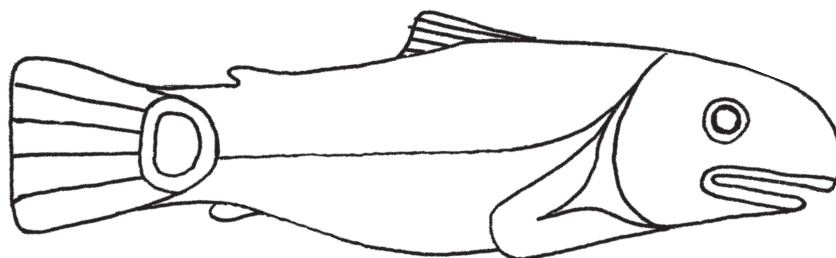
A person caught five king salmon.

He kept one.

How many did he sell?



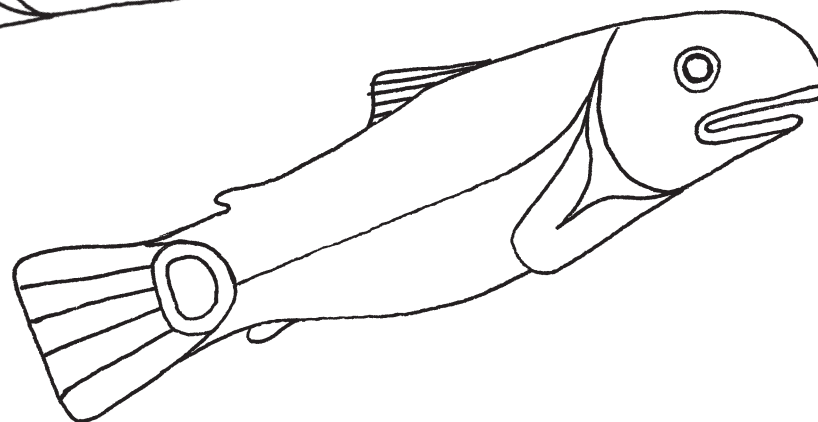
five 5



Keijín t'á kei awdzit'éx.

Tléix' awsineex.

X'oon t'á sá aawahoon?



_____ - _____ = _____

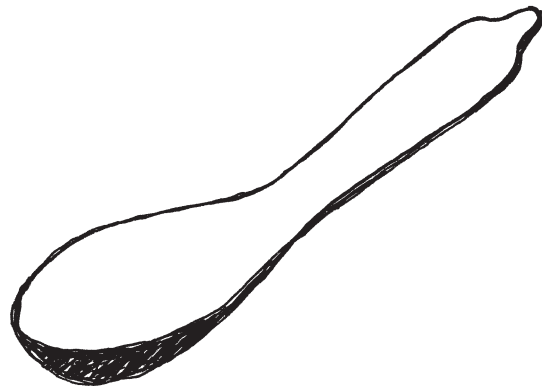
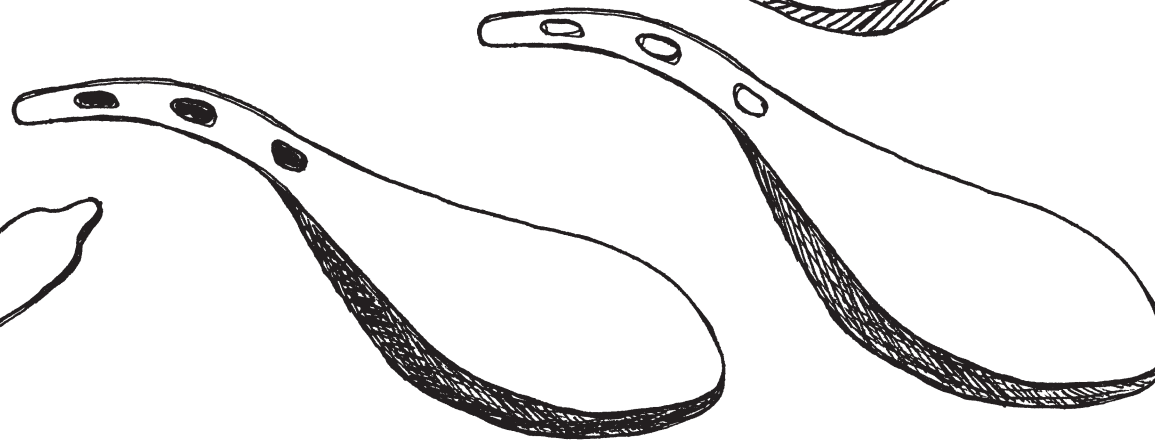
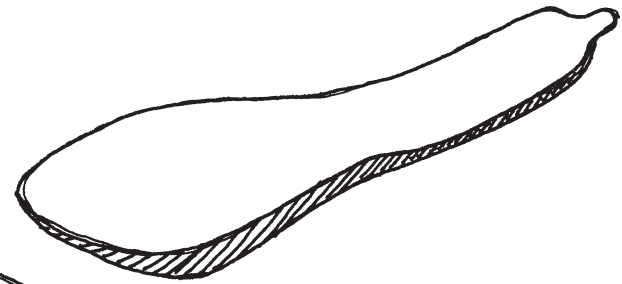


keijín

A person has eight spoons in hand.

Ten people need them.

How many spoons are lacking?

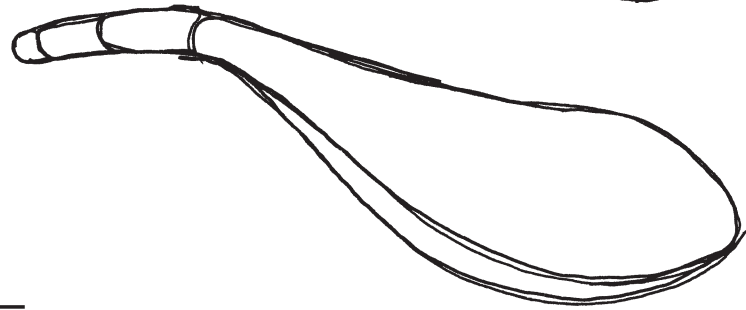




Nas'gadooshú shál áwé du jeewóo.

Jinkaadínáx ku.oo jiyís.

X'oon shál sá oosyéx?



_____ - _____ = _____



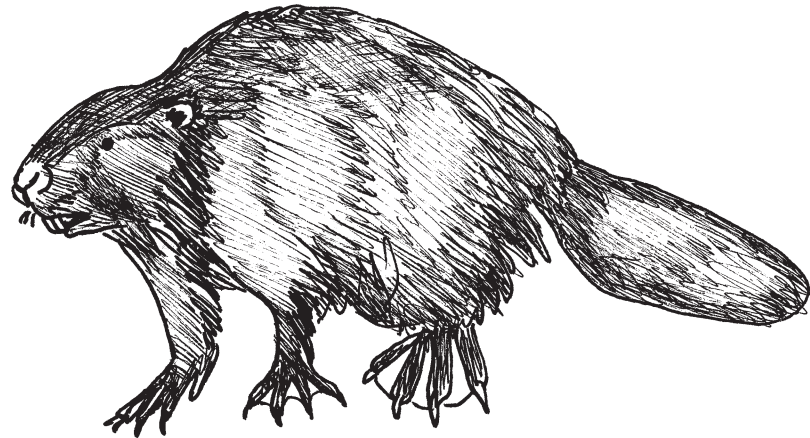
tleidooshú



Six beaver were trapped.

One sells for twenty dollars.

How much did he get?



Tleidooshú s'igeidée awdzigát.

Tleikáa dáanaa tléix' yéi aawahoon.

Wáa yáx sá ayaawadlaak?



_____ × _____ = _____



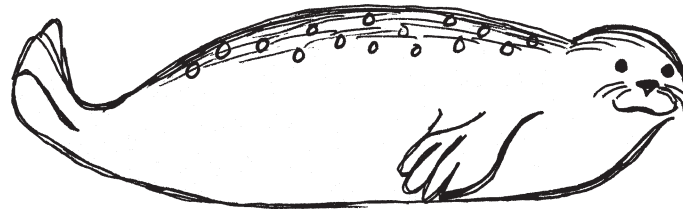
dax.adooshú



People shot thirteen seals.

One shirt takes three seals.

How many shirts did she sew? And how many were left over?



eight 8

Jinkaats ka nás'k tsaa has aawa.ún.

Nás'k tsaa, tléix' k'oodás'x satex.

X'oon k'oodás' sá aawakáa? Ka x'oon sá áa woonex?



_____ ÷ _____ = _____



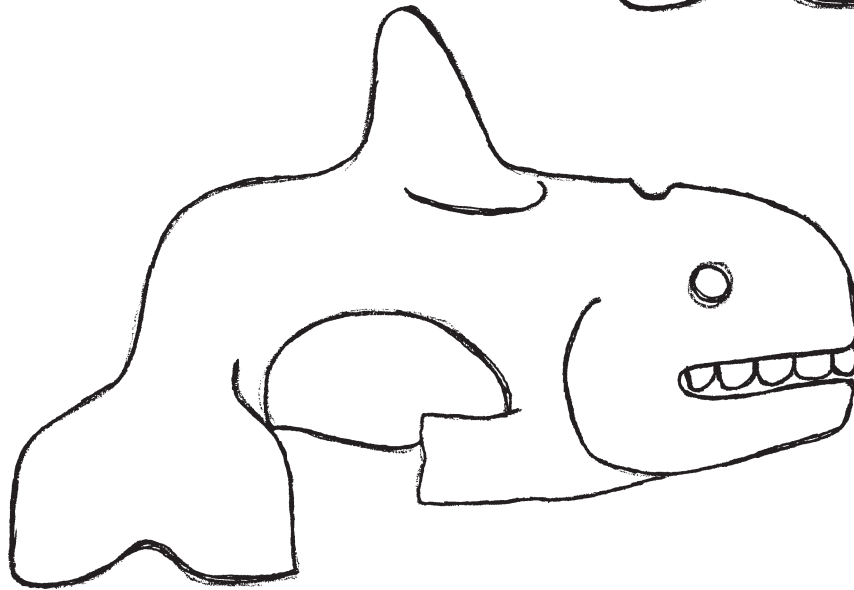
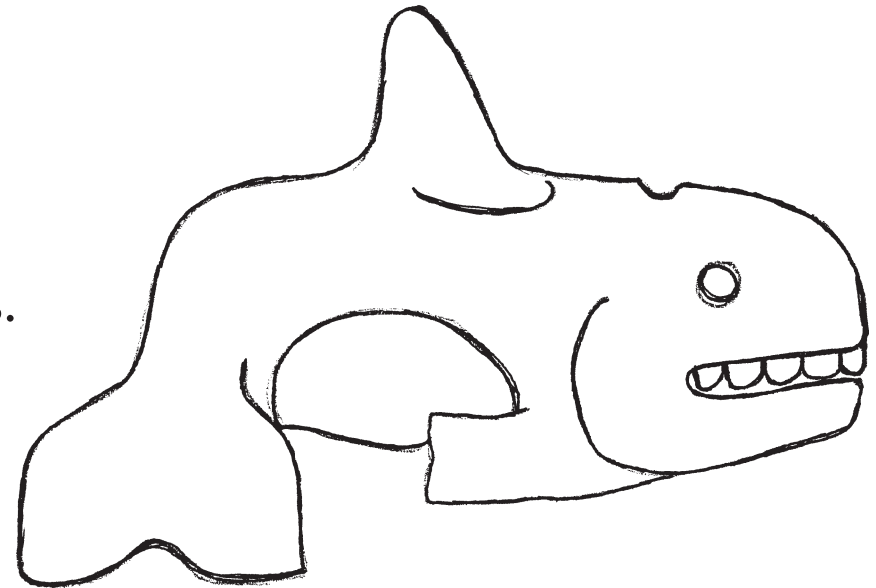
nas'gadooshú



Three killerwhales chased two whales.

One got away.

How many did they kill?

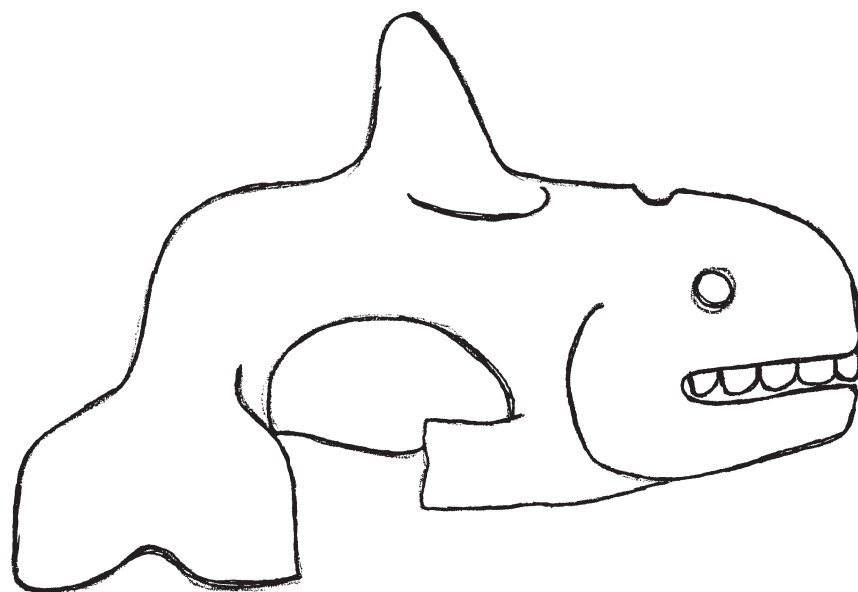


nine 9

Nás'k kéetch yaawa.aat déix yáay.

Tléix' sh wudzineex.

X'oon sá has aawajak?



_____ - _____ = _____



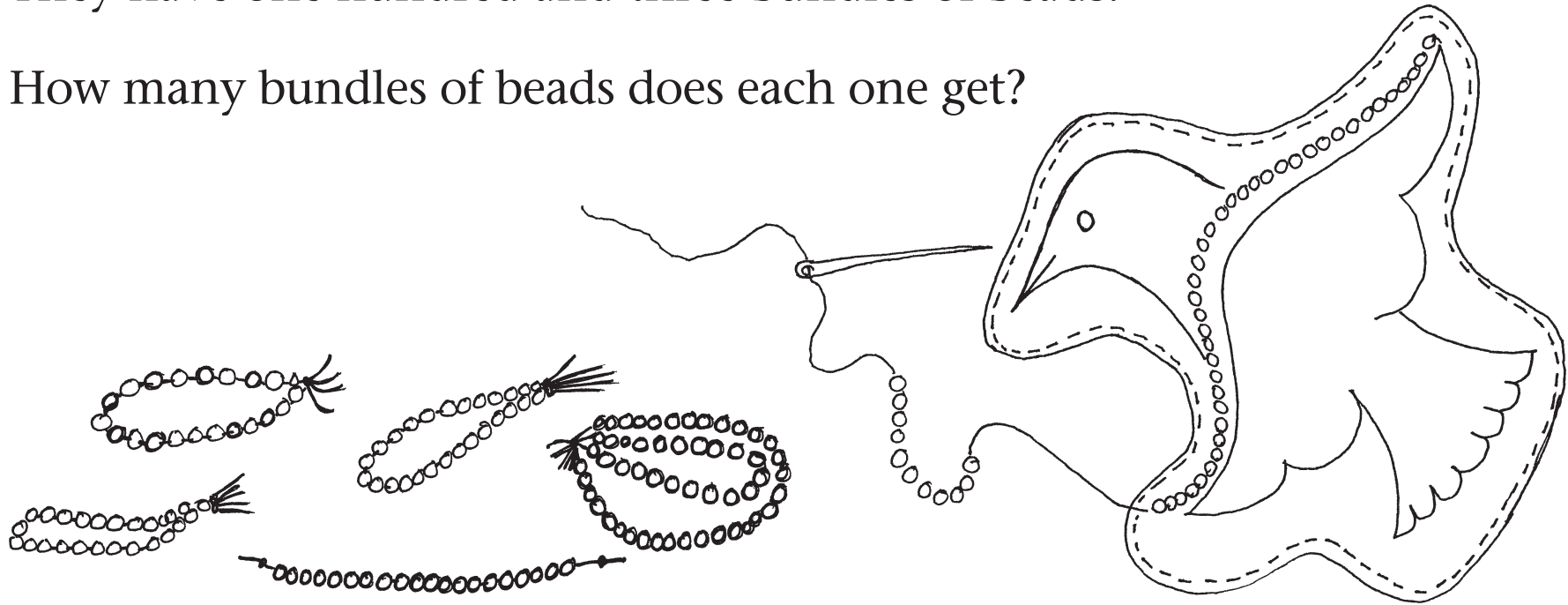
gooshúk



Thirteen children are sewing beads.

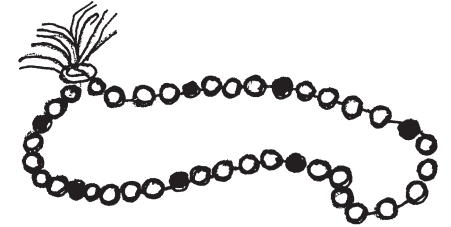
They have one hundred and three bundles of beads.

How many bundles of beads does each one get?



ten 10

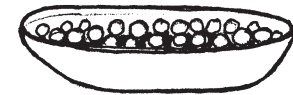
Jinkaat ka nás'k at yátx'ee kawóot has akéis'.



Tléix' hándid ka nás'k jinkaat kawóot shakat'éen has du jeewóo.

X'oon kawóot shakat'éen sá tléix' at k'átsk'u jee yéi kgwatée?

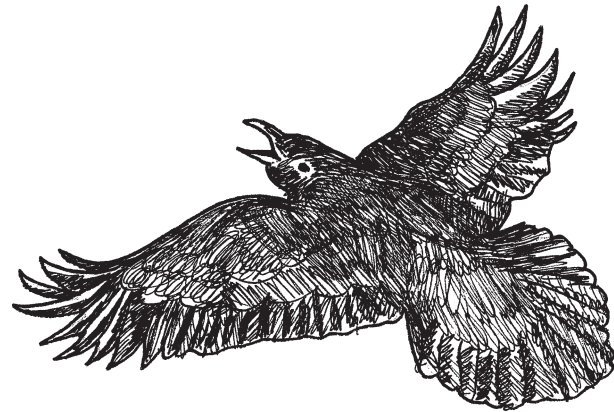
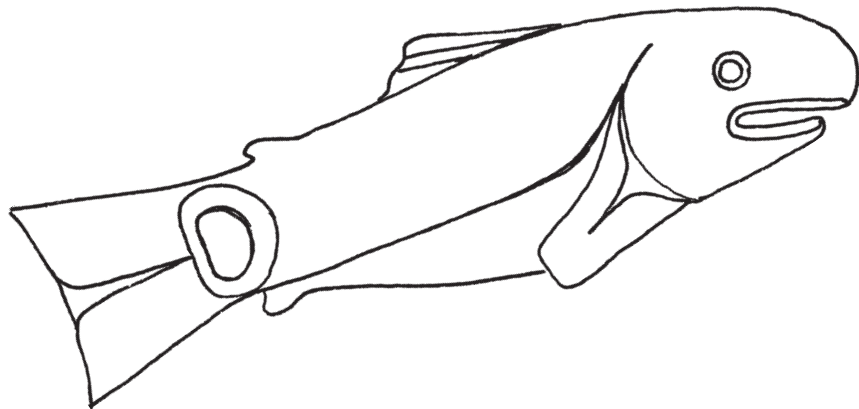
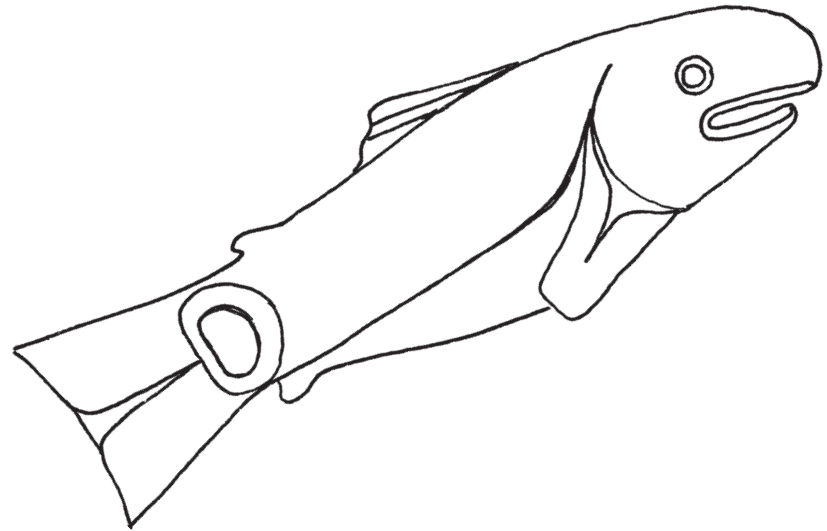
_____ ÷ _____ = _____

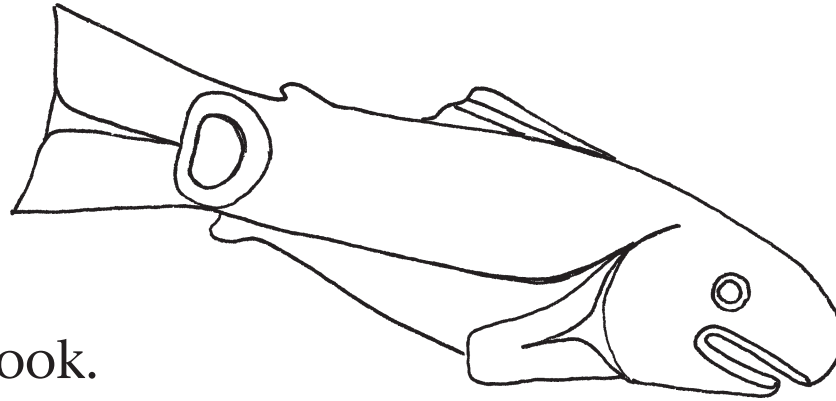


People are drying twenty salmon.

A raven ate two.

How many salmon did they dry?

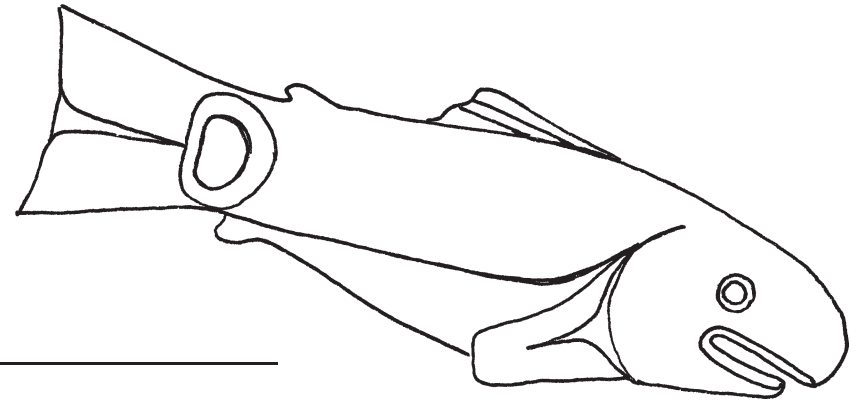




Tleikáa xáat has asxook.

Déix yéilch wusixáa.

X'oon xáat sá awsixúk?



_____ - _____ = _____



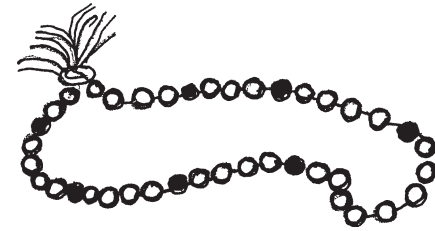
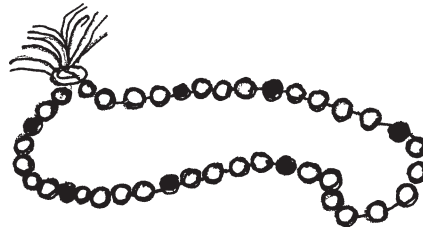
jinkaata ka tléix'



She has four bundles of beads.

She bought six more.

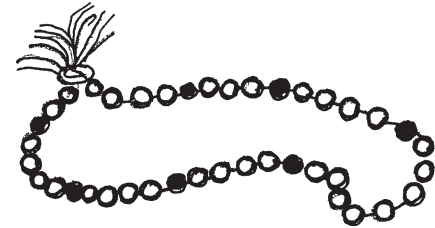
How many bundles does she have altogether?



twelve 12

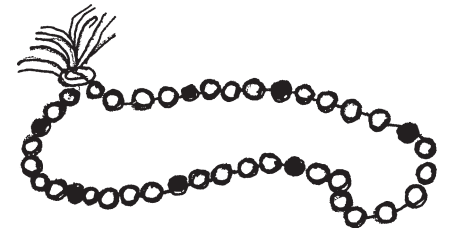
Daax'oon kawóot shakatl'een du jeewóo.

Tleidooshú tsú aa woo.oo.



X'oon shakatl'éen sá du jeewóo tle wóoshteen?

_____ + _____ = _____



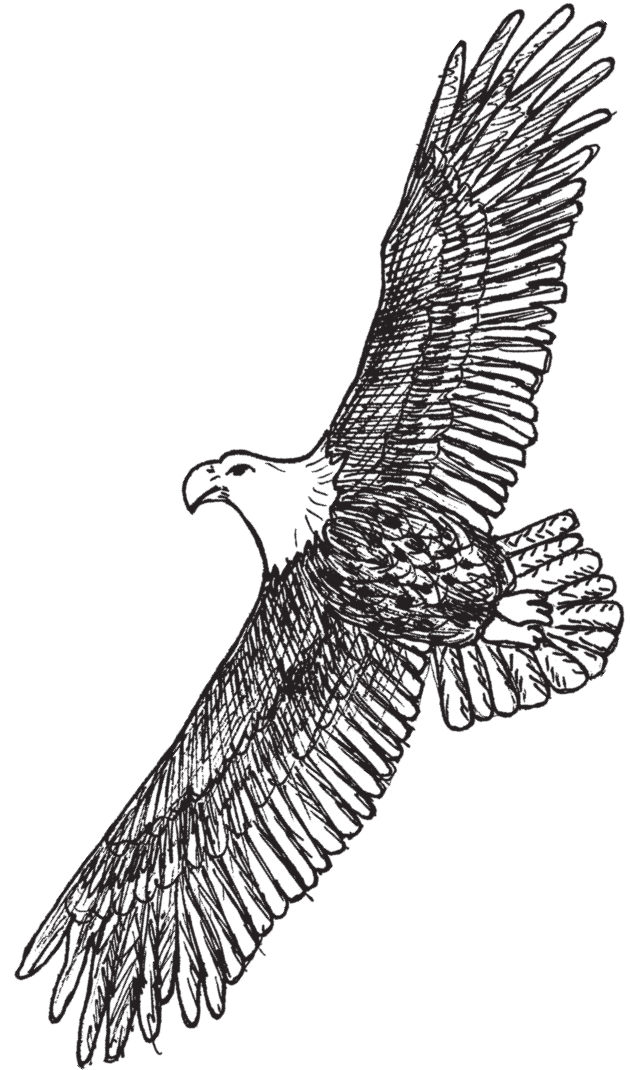
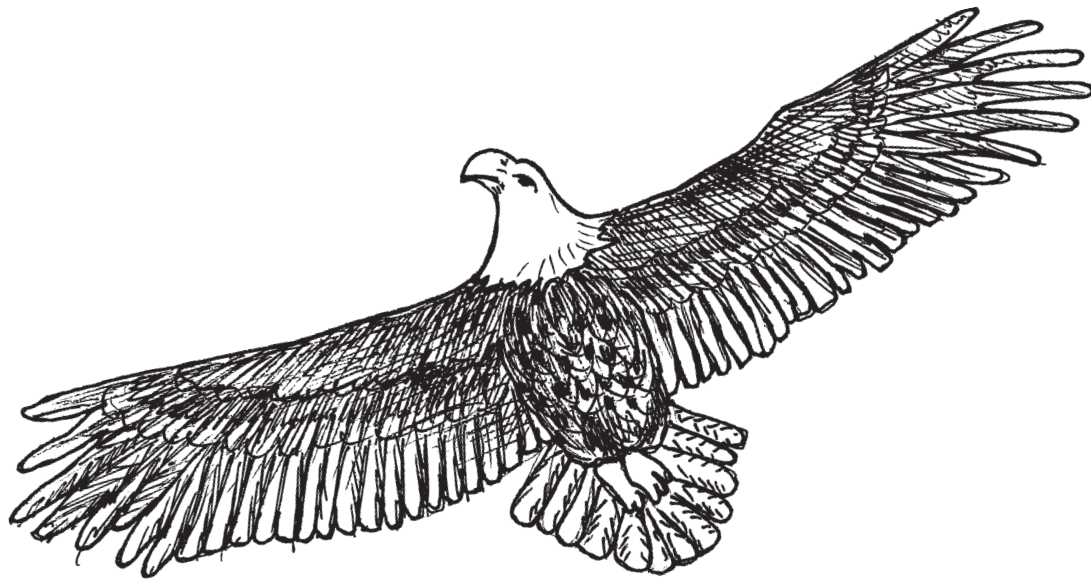
jinkaat ka déix



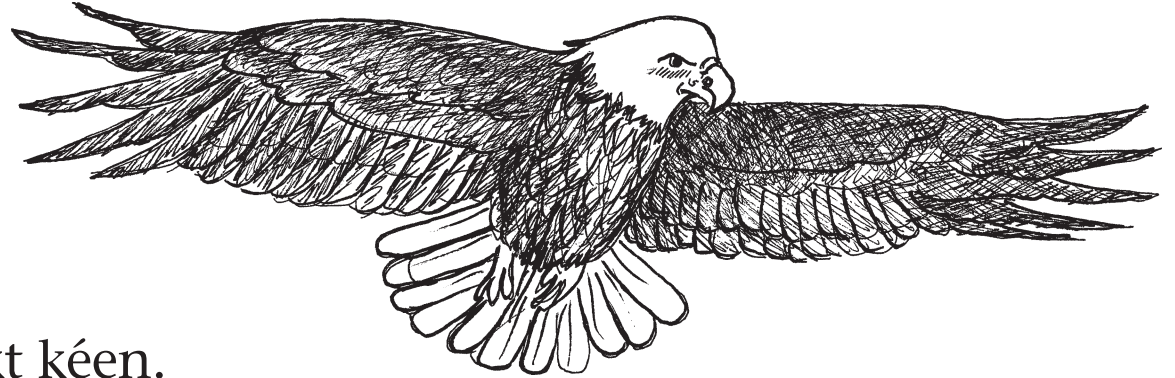
Ten eagles are sitting in a tree.

Three flew in.

How many eagles are there all together?



thirteen 13



Jinkaat ch'áak' aas yíkt kéen.

Nás'k át kawdliyeech.

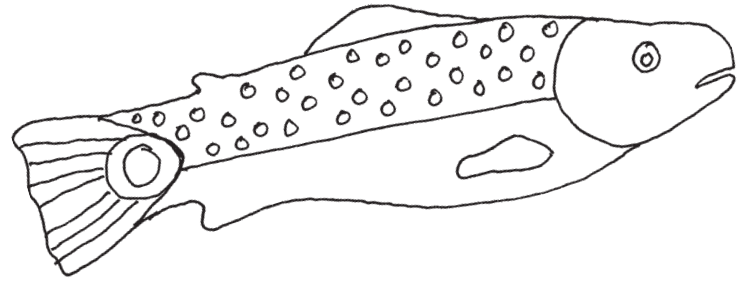
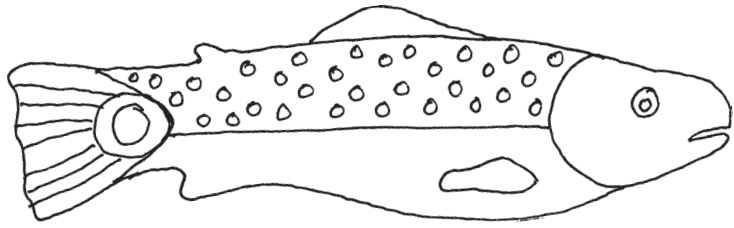
X'oon ch'áak' sá áwoo tle wóoshteen?

_____ + _____ = _____



jinkaat ka nás'k

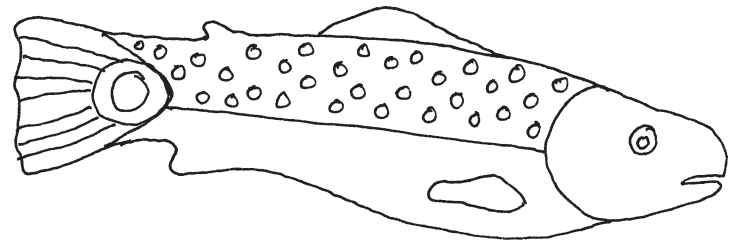
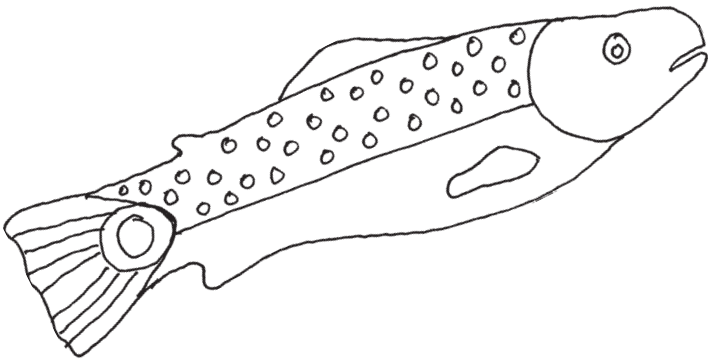
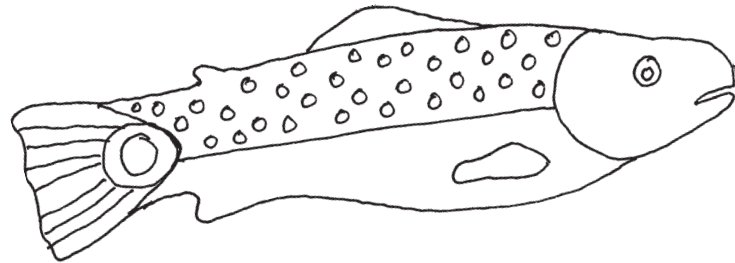
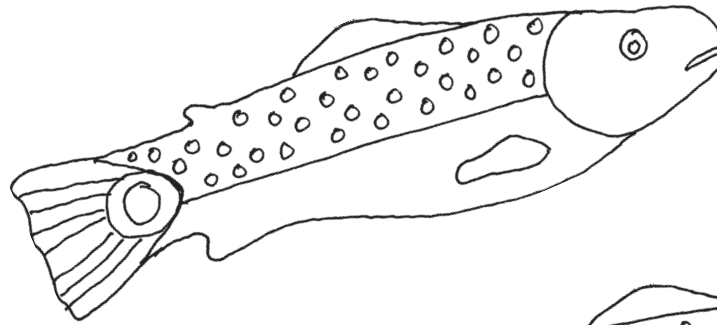




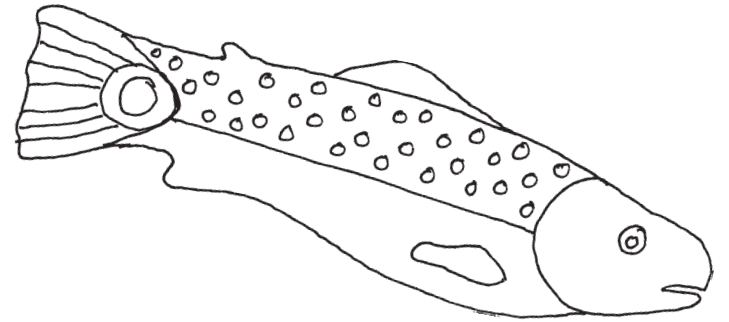
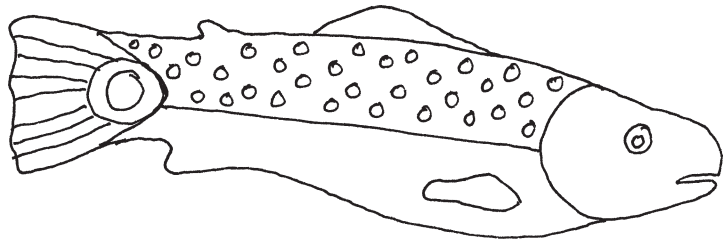
People have ten trout.

They cooked four.

How many were left?



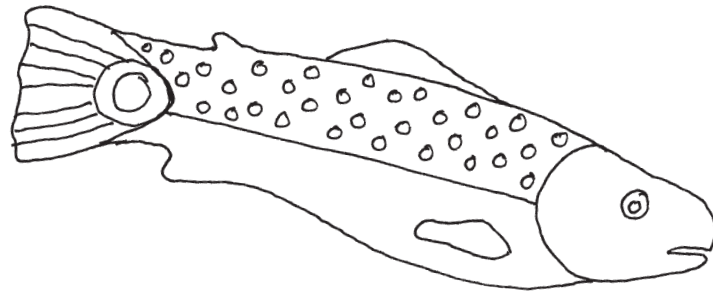
fourteen 14



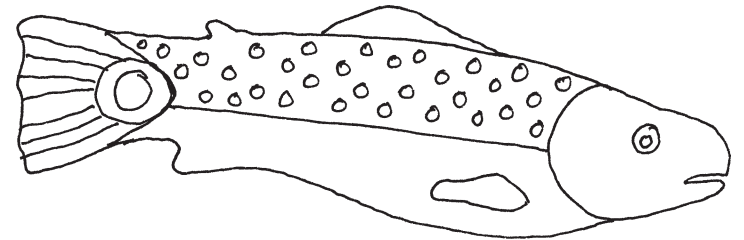
Jinkaat x'wáat' has du jeewóo.

Daax'oon has aawsi.ée.

Wáa sá áa woonex?



_____ - _____ = _____



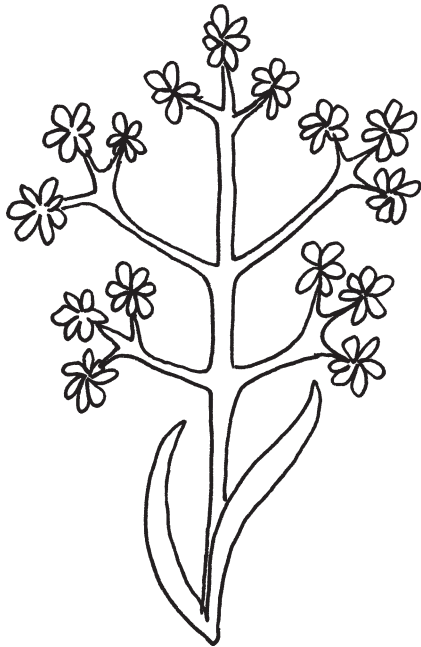
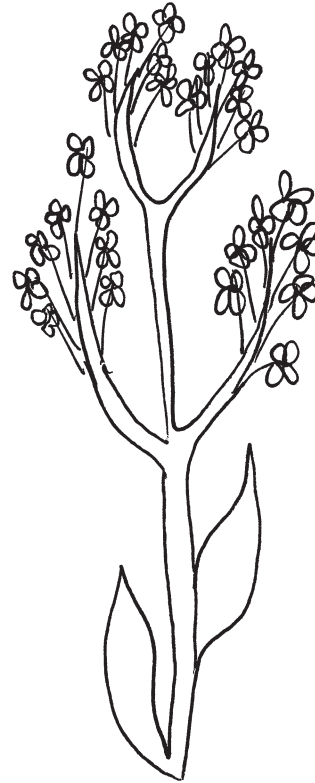
jinkaat ka daax'oon



Someone bought twenty flowers.

She needs eighteen for people.

How many flowers were not necessary?



fifteen 15

Tleikáa k'eikaxwéin aawa.oo.

Jinkaath ka nas'gadooshú ku.oo jiyís.

X'oon k'eikaxwéin sáwé du jeewóo ch'al kukanáax'?

_____ - _____ = _____



jinkaath ka keijín



Counting in Tlingit

| | | | |
|----|----------------------|----|--|
| 1 | tléix' | 11 | jinka <u>at</u> <u>ka</u> tléix' |
| 2 | déi <u>x</u> | 12 | jinka <u>at</u> <u>ka</u> déi <u>x</u> |
| 3 | nás'k | 13 | jinka <u>at</u> <u>ka</u> nás'k |
| 4 | daax'oon | 14 | jinka <u>at</u> <u>ka</u> daax'oon |
| 5 | keijín | 15 | jinka <u>at</u> <u>ka</u> keijín |
| 6 | tleidooshú | 16 | jinka <u>at</u> <u>ka</u> tleidooshú |
| 7 | da <u>x</u> .adooshú | 17 | jinka <u>at</u> <u>ka</u> da <u>x</u> .adooshú |
| 8 | nas'gadooshú | 18 | jinka <u>at</u> <u>ka</u> nas'gadooshú |
| 9 | gooshú <u>k</u> | 19 | jinka <u>at</u> <u>ka</u> gooshú <u>k</u> |
| 10 | jinka <u>at</u> | 20 | tlei <u>k</u> áa |

Tlingit Number System Old Way (Base 20)

| | |
|-----|---|
| 20 | tlei <u>k</u> áa (one person) |
| 30 | tlei <u>k</u> áa <u>ka</u> jinka <u>at</u> |
| 40 | da <u>x</u> <u>k</u> áa (two persons) |
| 50 | da <u>x</u> <u>k</u> áa <u>ka</u> jinka <u>at</u> |
| 60 | nás'k <u>k</u> áa (three persons) |
| 70 | nás'k <u>k</u> áa <u>ka</u> jinka <u>at</u> |
| 80 | daax'oon <u>k</u> áa (four persons) |
| 90 | daax'oon <u>k</u> áa <u>ka</u> jinka <u>at</u> |
| 100 | keijín <u>k</u> áa (five persons) |
| 200 | jinka <u>at</u> <u>k</u> áa (ten persons) |

Tlingit Number System New Way (Decimal)

| | |
|-----|---|
| 20 | tlei <u>k</u> áa |
| 30 | nás'k jinka <u>at</u> (three tens) |
| 40 | daax'oon jinka <u>at</u> (four tens) |
| 50 | keijín jinka <u>at</u> (five tens) |
| 60 | tleidooshú jinka <u>at</u> (six tens) |
| 70 | da <u>x</u> .adooshú jinka <u>at</u> (seven tens) |
| 80 | nas'gadooshú jinka <u>at</u> (eight tens) |
| 90 | gooshú <u>k</u> jinka <u>at</u> (nine tens) |
| 100 | tléix' hándid |
| 200 | déi <u>x</u> hándid (two hundred) |

Tlingit Number System



5
keijín
five fingers up



9
gooshúk
before the thumb



10
jinkaát
ten fingers up like a basket



20
tleikáa
one person (ten fingers, ten toes)

Human Counting System

tleináx káa – one man
daxnáx káa – two men
nas'gináx káa – three men
daax'oonínáx káa – four men
keijínináx káa – five men
tleidooshúnináx káa – six men
dax.adooshunináx káa – seven men
nas'gidooshunináx káa – eight men
gooshugunáx káa – nine men
jínkaadínáx káa – ten men

Ceremonial Numbers

The Tlingit ceremonial number is four (daax'oon). Four mourning songs are sung for the removal of grief, shouts to cleanse sorrow are repeated four times, when names are given they are repeated four times, multiples of four may be used for days of fasting before important work or events: 4, 8, 12, 16, etc.

Concept of Quantity

yángaa – a little
shayadihéin – many
yéi yagu.áats' – not too much/many
wooch yaayí – a pair

Counting Animals and Things

tléix' jánwu – one goat
déix guwakaan – two deer
nás'k xáat – three salmon
daax'oon gáaxw – four ducks
keijín cháatl – five halibut
tleidooshú ts'ítskw – six birds
dax.adooshú aas – seven trees
nas'gidooshú shál – eight spoons
gooshúk yaakw – nine boats
jinkaats'íx' – ten bowls

Concepts of Time

satgawsaan – twelve noon
tléix' gaaw – one o'clock
déix gaaw – two o'clock

Days of the week

tléix' yagiyée – Monday
déix yagiyée – Tuesday
nás'k yagiyée – Wednesday
daax'oon yagiyée – Thursday
keijín yagiyée – Friday
tleidooshú yagiyée – Saturday
dax.adooshú yagiyée – Sunday

Traditional Measurements Using the Human Body

one inch

first thumb nail joint

tléix' kaa tl'ekx'áak

seven inches

spread between little finger and thumb

twelve inches

elbow to end of fist

one foot

tléix' kaa x'oos

thirty-six inches or one yard

spread between one open arm and middle of the chest

tléix' káas'

one fathom

spread between open arms

tléix' waat

thirty horsepower

nás'k jinkaak gawdaan latseení

Liquid Measurements

tléix' shál k'átsk'u
one teaspoon

tléix' shál k'átsk'u ka a shoowú
one teaspoon and a half

tléix' shál tlein
one tablespoon

tléix' gúx'aa
one cup

tléix' k'atéil
one gallon

tléix' gayéis' lákt
five gallon can

Linear Measurement

tléix' kaa tl'ekx'áak
one inch

tléix' kaa x'oos
one foot

déix kaa x'oos
two feet

tléix' kaas'
one yard

tléix' waat
one fathom

tléix' kaay
one mile

Glossary

Title Page

woosh yáx yaa datúwch – math

Gaawt'ak.aaan – Hoonah

sgoon – school

sgóonwaanch – by the students

kawshixít – wrote

Yakw_xwaan Tláach – by Katherine Mills

koo wlitúw – taught

One

ch'áak' – eagle

ka – and

yéil – raven

át – around there

kawdliyeech – were flying

x'oon sáwé – how many are there

tle wóoshteen – all together

Two

xóots – brown bear

woo.aat – went on foot

yú – that

kaach – by a man

aa – one

oowa.ún – shot

x'oon sá – how many

áa – there

wooneex – were left (survived)

Three

ts'ítskw – small bird

át – there

keén – are sitting

aax – from there

wáa yakugei sá áwu – how many are there

Four

tsaa – seal

aawa.ún – he shot it

guwakaan – deer

x'oon yateeyi át sá – how many things

Five

t'á – king salmon

kei awdzit'éx – he hooked it

awsineex – he saved, kept

aawahoon – did he sell

Six

shál – spoons

áwé – there are

du jeewóo – she or he has

ku.oo jiyís – for the people

oosyéx – does she or he need, lack

Seven

s'igeidée – beaver
awdzigát – were trapped
daánaa – dollar
yéi aawahoon – he sold it for
wáa yáx – how much
ayaawadlaak – did he gain

Eight

has – they
k'oodás'x – coat (predicate nominative)
sateex – it becomes
aawakáa – did she sew

Nine

kéetch – killer whales (subject)
yaawa.aat – chased
yáay – whales
sh wudzineex – saved himself
aawaják – did they kill

Ten

at yátx'ee – children
kawóot – beads
akéis' – is/are sewing
shakatl'éen – bundle of beads
at k'átsk'u – child
jee – in hand
yéi kgwatée – will be, will each get

Eleven

xáat – fish, salmon
asxook – is/are drying
yéilch – raven (subject)
wusixáa – ate
awsixúk – did he/she dry

Twelve

aa woo.oo – she brought (some)

Thirteen

aas – tree
yíkt – in
kéen – are sitting

Fourteen

x'wáat' – trout
aawsi.ée – cooked

Fifteen

k'eikaxwéin – flower
ch'al – just
kukanáax' – wasted; in vain