UNIT 12:
Statistics & Probability
Analysis & Central Tendency

Note: All key terms are based on the Math Standards for Alaska and reflect terms vital to academic achievement in math.

INTRODUCTION OF MATH VOCABULARY

Process Skills

Concrete Introduction of Key Vocabulary
Note: *A vocabulary graphic is provided in this unit for each of the key words. Definitions for all of the key words can be found in the glossary at the back of this program.*

interpretation

Show the students the picture of the Mona Lisa on page 875. How many students think that she is smiling? How many do not? Explain the definition of interpretation and that many things can be interpreted differently depending on the angle that it is viewed from.

trends

Trends occur all around us on a daily basis. From fashion to music to politics and hair styles, our lives are often in flux. What trends have the students recently seen? Perhaps in fishing success locally?

justify

Write on the board 2+2=5. Ask the students if this is correct and when they say no, ask them to explain why. Tell them that they are justifying their objection to your conclusion!

Process Skills

Concrete Introduction of Key Vocabulary
Note: *A vocabulary graphic is provided in this unit for each of the key words. Definitions for all of the key words can be found in the glossary at the back of this program.*

range

Write the students' ages on the board. What are the youngest and oldest ages in the class? Explain that these upper and lower limits define the range of ages.

median

Using a list of the students' ages in ascending order, explain the definition of the median number and have the students tell you what it is.

mean

Make a list on the board of how many pets each student has in their home. Ask them to find the mean or "average" number of pets.

Process Skills

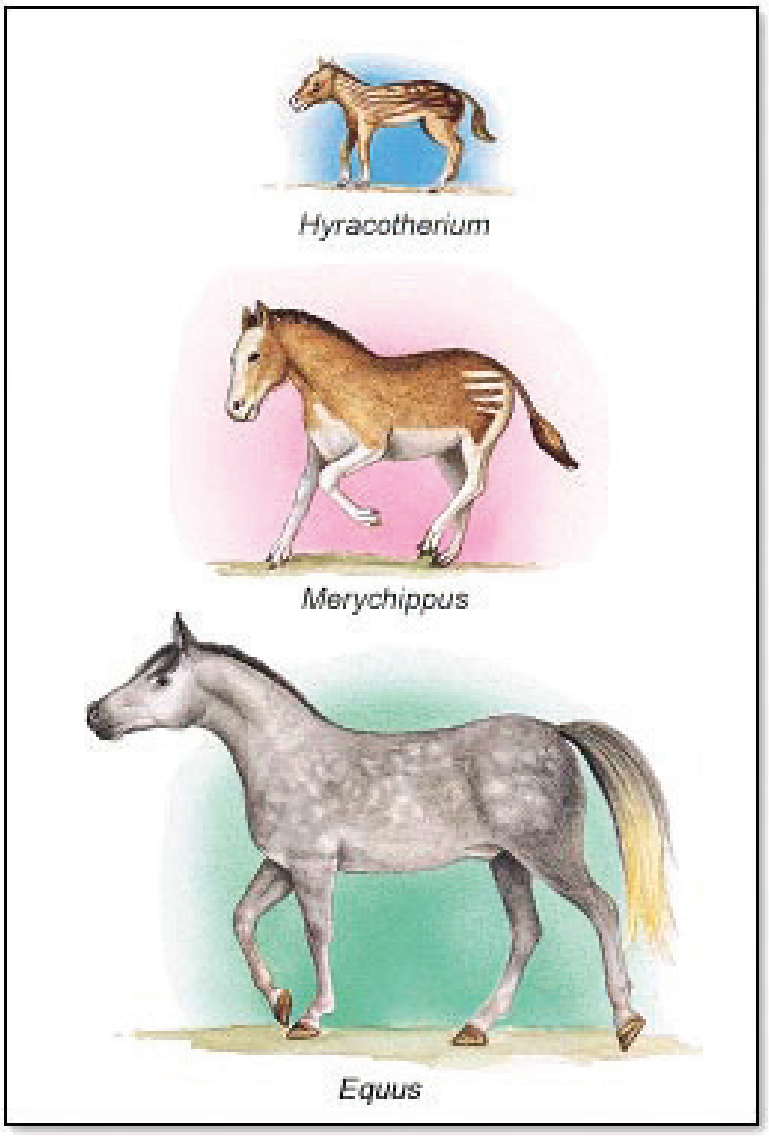
Concrete Introduction of Key Vocabulary
Note: *A vocabulary graphic is provided in this unit for each of the key words. Definitions for all of the key words can be found in the glossary at the back of this program.*

mode

Make a list on the board of how many fish each student has caught in the past two years. Explain that mode is the number that occurs most frequently in the list of numbers. What is the mode for fish caught?

VOCABULARY PICTURES

INTERPRETATION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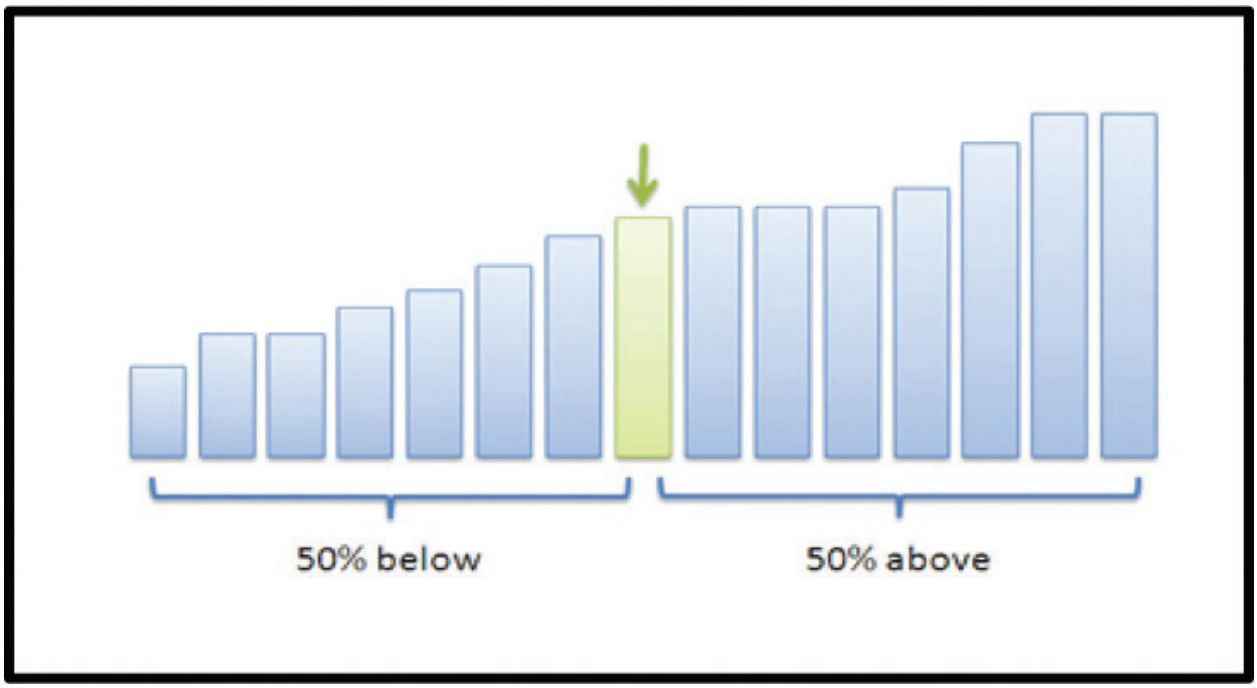
Merychippus
Equus

TRENDS

70162
U.S. AIR FORCE

JUSTIFY

RANGE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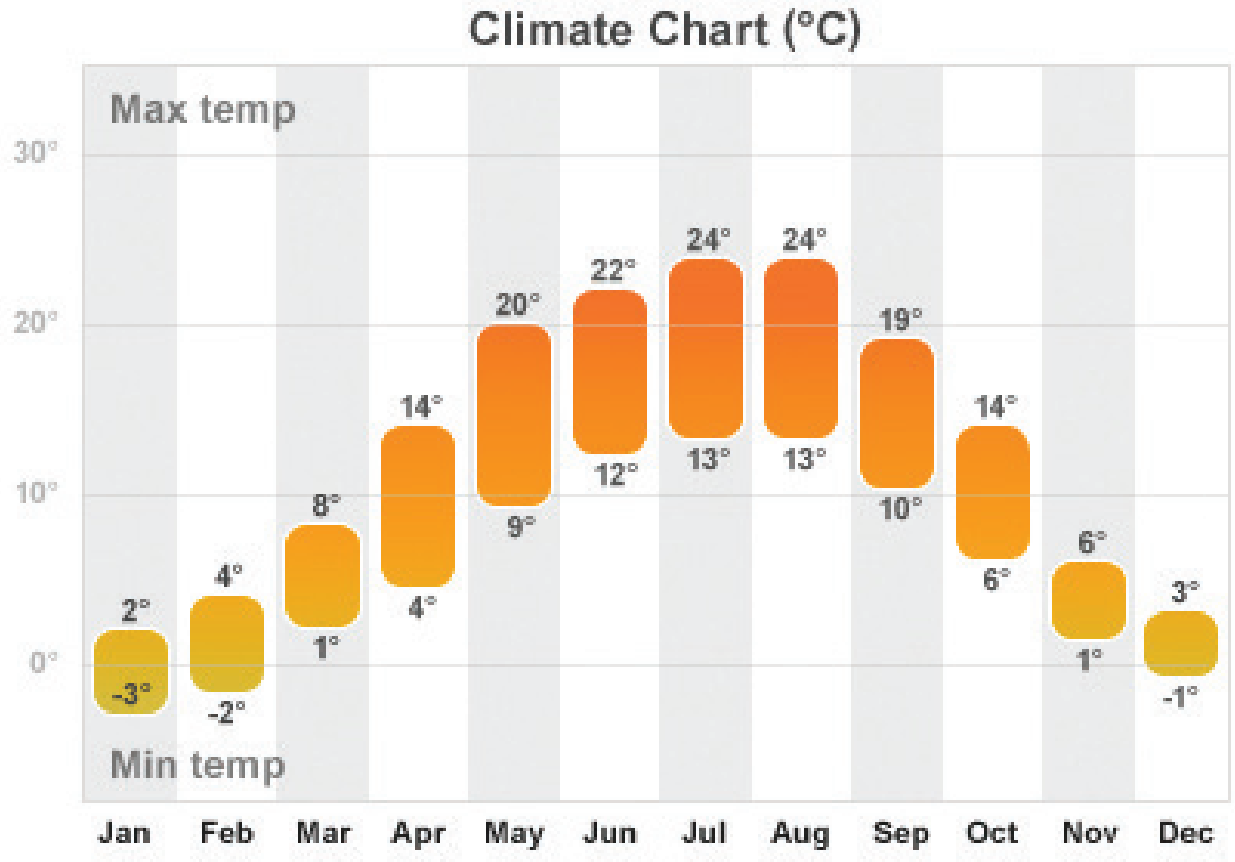
MEDIAN


Climate Chart (°C)
Max temp
Min temp
30°
20°
10°
0°
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2°
-3°
4°
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8°
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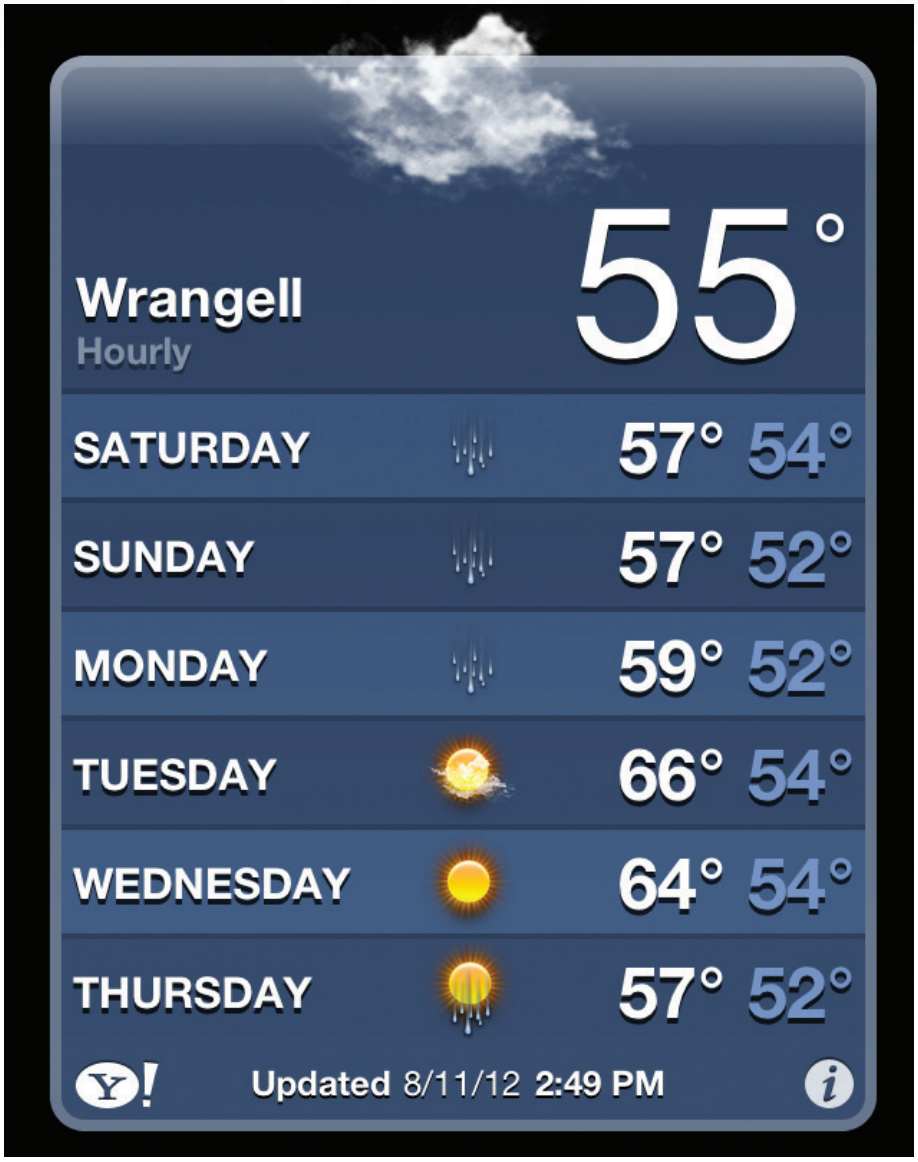
1°
3°
-1°

MEAN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THURSDAY
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MODE

LANGUAGE ACTIVITIES

Language and Skills Development

LISTENING

Review the key math words introduced in this unit. If the vocabulary pictures were not presented during the introduction, show them to the students at this time.

Locomotive

Have the students stand in a straight line in the center of the room. Each student should place his hands on the shoulders of the student in front of him/her. Mount a picture on each of the four walls in the classroom. Tell the students that when they hear one of the four vocabulary words (for the four pictures on the walls), they should step in that direction while still holding onto the shoulders of the players in front of them. Say the four words a number of times; the students should step toward the pictures as they are named.

Funnel Vision

Before the activity begins, collect a large funnel. Have a student stand at the front of the classroom with his/her back to the other students. Give the student the funnel. Give the vocabulary pictures to the other students in the class. The students should hold their pictures up, facing the front of the classroom. Say a vocabulary word. When you say "Go," the student with the funnel should place the funnel over his/her eyes and turn to face the other students. The student must then look through the funnel to find the picture for the vocabulary word you said. This activity may be conducted with two players (each player having a funnel). The winner of each round is the student who locates the correct picture first. Have the students in the class exchange pictures for each new round of the activity. Repeat.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials from this unit. Afterward, review their work.

Language and Skills Development

SPEAKING

Flip of the Coin

Provide each student with a penny. Keep one penny for yourself. Mount the vocabulary pictures on the board. Have the students (gently) toss their pennies into the air. Each student should look to see which side of his/her penny is face-up. Toss your penny into the air in the same way. Call the side of your penny that is face-up. The students who have the same side of coin face up must then identify (orally) a vocabulary picture you point to. For example, if the heads side of your coin is face up, the students who have heads showing on their coins must then orally identify the vocabulary picture you point to. Repeat this process a number of times.

High Roller

Give a die to each of two students. When you say "Go," the students should roll their dice. The student who rolls the highest number on his/her die must then say a complete sentence about a vocabulary picture that you show. Repeat this process until many students have responded with sentences of their own.

Language and Skills Development

READING

Introduce the math sight words to the students — match the sight words with the vocabulary graphics. The sight words are included in the Student Support Materials, attached to these lesson plans.

Word Length

Before the activity begins, cut a number of sight word cards into different lengths (e.g., 5 in., 15 cm., etc.). Place the sight word cards on the floor at one end of the classroom. Group the students into two teams at the other end of the classroom. Place two rulers on the floor beside the sight words. Say a different measurement to the first player in each team. When you say "Go," the first player in each team must rush to the sight word cards. Each player must then use the ruler to locate a sight word card that is the same length as the measurement you said. When a player has done this successfully, he/she should read the sight word on that card. Repeat until all players in each team have participated.

What's Your Sequence?

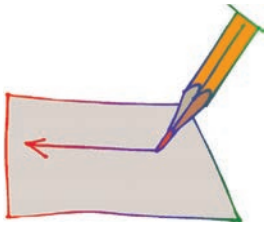
Provide each student with four blank flashcards. Write four sight words on the board. Each student should write the same sight words on each of his cards (one word per card). When the students' cards are ready, have them arrange their sight word cards in a specific sequence on their desks (each student should determine his/her own sequence of words). Then, say a sequence of the four words. Any student or students who have their sight words in the same sequence as you said win the round. The winner or winners of this activity are those students who collect the greatest number of wins. The students may change the sequence of their sight word cards after each round of the activity.

Letter Encode

Prepare a page that contains large alphabet letters from A to Z. Make five copies for each student. The students should cut out their letters. When all of the letters have been cut out, show a vocabulary picture. The students should then use their letters to spell the word for that picture. Repeat, using the remaining pictures from this unit. Have the students store their cut out letters in individual envelopes.

Language and Skills Development

WRITING



Backwards Spell

Provide each student with writing paper and a pen. Spell one of the sight words, backwards. When you have completed the spelling of the word in this way, each student should then write the word you spelled on his/her sheet of paper, writing the letters of the word in their correct order. The students should not begin to write the word until AFTER you have completed the backwards spelling of the word. Repeat this process with other sight words. This activity may also be done in team form. In this case, group the students into two teams. Spell one of the sight words backwards. When you say "Go," the first player from each team must rush to the chalkboard and write the word that you said - writing the letters of the word in their correct sequence. The first player to do this correctly wins the round. Repeat until all players have participated.

Sentence Completion

Write a number of sentence halves on individual sentence strips. These should include both the beginning and ending halves of sentences. Mount the sentence halves on the board and number each one. Provide the students with writing paper and pencils/pens. Each student should then complete ONE of the sentence halves in his/her own words, writing his/her part of the sentence on the sheet of paper. When the students have completed their sentence halves, have a student read ONLY the sentence half he/she wrote. The other students must then attempt to identify the "other half" of the sentence on the board (by its number). Repeat until all of the students have shared their sentence halves in this way.

Student Support Materials

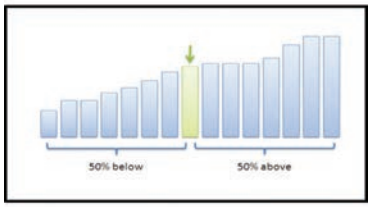
Have the students work on the activity pages from the Student Support Materials from this unit. Afterward, review their work.

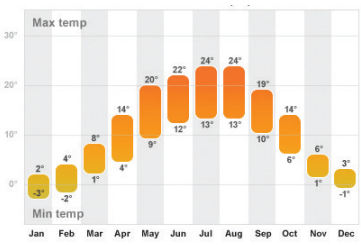
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures

Listening: Mini Pictures

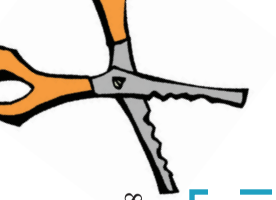
Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.





STUDENT SUPPORT MATERIALS

Sight Words



interpretation

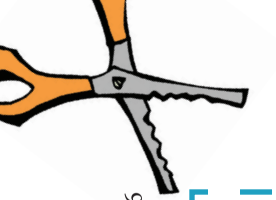
trends

justify

range

median

mean



mode

STUDENT SUPPORT MATERIALS

Reading • Sight Recognition

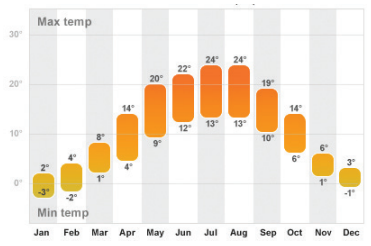
Sight Words Activity Page

Have the students circle the word for each picture.

interpretation
trends
justify
range
median
mean
mode

interpretation
trends
justify
range
median
mean
mode

interpretation
trends
justify
range
median
mean
mode

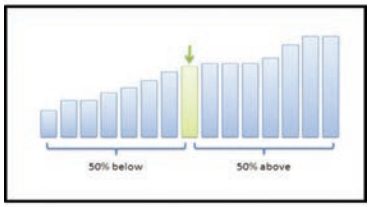


interpretation
trends
justify
range
median
mean
mode

interpretation
trends
justify
range
median
mean
mode

interpretation
trends
justify
range
median
mean
mode

Sight Words Activity Page



interpretation

trends

justify

range

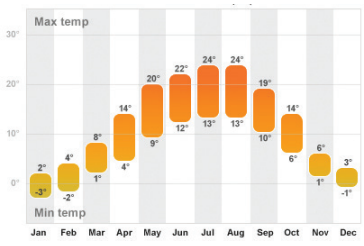
median

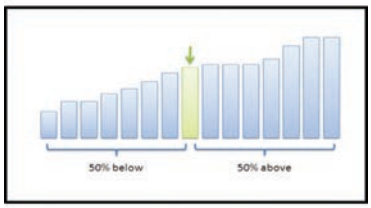
mean

mode

Sight Words Activity Page

Write the numbers on their correct vocabulary graphics.





1. **interpretation**
2. **trends**
3. **justify**
4. **range**
5. **median**
6. **mean**
7. **mode**

Sight Words Activity Page

Write the key words from this unit horizontally in the boxes (more than one copy of each word can be written). Fill in all other boxes with any letters. Exchange page with another student. Find key words and circle.

Sight Words Activity Page

Highlight or circle the words in this word find.

trends
mean
justify
median
interpretation
mode
range

e y n m e d i a j t e s e d e i e n a t n n n n i
d g n e o n e a i u e m a s t u d e y r r a m e m
e o t i f n t i d t o a r d g r r i i t e n j t e
s t n e a r o d a e n a r o e e o e e y p d o a d
e u m a o u d r n a e o n r r e e e t e e o s t n
t n r e t o n j e i d s r i t n t e r y e n t t t
m e n s a n i r n j o m n t i t r e n d s m e i r
i n t e r p r e t a t i o n t t g o a m y o e a i
p n o e r t r s n i r i t a r n d d r a o n s d g
t f n r i y s a n n i f a n u e a n u d n e f t n
s t t e t r e n e m j u s t i i t s t t s d a e f
o p r y t n r p t n n m e t r r a r m n f n a n a
t u n r e n d t d m u t n m m e i r s n i r s i r
n d r e m n a a t i d j a a u s s m n m n u r o e
e t n y j t m n n i i n t e r p r e t a t i e e n
n r i e e d i t r r m u s n e i s a o e i n s a s
i m e d i a n n e d n s m f m a a j o t e u t r n
p i a i n n n d i r t p t u t o m y n a o s p a g
i t a u n a e s e f s i j u s t i f y n e r d m d
t j t m p i n n e n n r n a e n i y f e m m e a n
e n g e n n e m s e e i o r a e n d y i i d p d e
e i o t e r t t u m p t n r e a i r a n g e f d n
s d r r d d t n m a t t e d m e t n i o a t t t a
d d m e e o d n e p i j g n a t t n t a m e t t d
t d m n t n s t a n e n r e t d j n e n n f n n u
y a o o d t m o d e t d f n y r m n o g m t t r f
s n r n s r i a u a s a s a s a e m f m i m e n i r t
f e e s r e y a e n e r n n m r a a r n r r f o o
a d i n m n r m n p d p e e e o t n o u a t p m t
t m m s a m e n p s m j n e a i d d e d f m a m i

Sight Words Activity Page

ANSWER KEY

trends
mean
justify
median
interpretation
mode
range

e y n m e d i a j t e s e d e i e n a t n n n n i
d g n e o n e a i u e m a s t u d e y r r a m e m
e o t i f n t i d t o a r d g r r i i t e n j t e
s t n e a r o d a e n a r o e e o e e y p d o a d
e u m a o u d r n a e o n r r e e e t e e o s t n
t n r e t o n j e i d s r i t n t e r y e n t t t
m e n s a n i r n j o m n t i t r e n d s m e i r
i n t e r p r e t a t i o n t t g o a m y o e a i
p n o e r t r s n i r i t a r n d d r a o n s d g
t f n r i y s a n n i f a n u e a n u d n e f t n
s t t e t r e n e m j u s t i i t s t t s d a e f
o p r y t n r p t n n m e t r r a r m n f n a n a
t u n r e n d t d m u t n m m e i r s n i r s i r
n d r e m n a a t i d j a a u s s m n m n u r o e
e t n y j t m n n i i n t e r p r e t a t i e e n
n r i e e d i t r r m u s n e i s a o e i n s a s
i m e d i a n n e d n s m f m a a j o t e u t r n
p i a i n n n d i r t p t u t o m y n a o s p a g
i t a u n a e s e f s i j u s t i f y n e r d m d
t j t m p i n n e n n r n a e n i y f e m m e a n
e n g e n n e m s e e i o r a e n d y i i d p d e
e i o t e r t t u m p t n r e a i r a n g e f d n
s d r r d d t n m a t t e d m e t n i o a t t t a
d d m e e o d n e p i j g n a t t n t a m e t t d
t d m n t n s t a n e n r e t d j n e n n f n n u
y a o o d t m o d e t d f n y r m n o g m t t r f
s n r n s r i a u a s a s a s a e m f m i m e n i r t
f e e s r e y a e n e r n n m r a a r n r r f o o
a d i n m n r m n p d p e e e o t n o u a t p m t
t m m s a m e n p s m j n e a i d d e d f m a m i

STUDENT SUPPORT MATERIALS

Reading • Encoding

Encoding Activity Page

Have the students cut out the word parts and glue them into their correct words.

in_____tation

t_____s

j_____fy

r_____

m_____n

rend	ange	edia
ode	usti	

Encoding Activity Page

m_____

m_____

terpre | ean

Encoding Activity Page

Have the students cut out the word halves and glue them together to create the key words for this unit.

inter	**ends**
tr	**pretation**
jus	**nge**
ra	**de**
med	**an**

Encoding Activity Page

me	**ian**
mo	**tify**

Encoding Activity Page

Cut out and encode the syllables of the words OR number the syllables in their correct sequence.

in	ter	tion	ta	pre

trends

fy	ti	jus

Encoding Activity Page

range

_____

di **an** **me**

_____ _____ _____

mean

_____

mode

_____

STUDENT SUPPORT MATERIALS

Reading Comprehension

What's the Answer?

Read the text and then select the correct answer for it. Fill in the bullet beside the answer of your choice.

1. The justices of the Alaska Supreme Court sometimes have different _____ of the Alaska constitution.
   - ❍ Visions
   - ❍ Interpretations
   - ❍ Versions
   - ❍ Authors

2. Trends can occur in
   - ❍ Mathematics
   - ❍ Cultures
   - ❍ Fashion
   - ❍ All of the above

3. Some people feel guilty when they make a large purchase and may feel the need to _____ that purchase.
   - ❍ Continue
   - ❍ Justify
   - ❍ Fake
   - ❍ Increase

4. The extent of area that black bears occupy in North America refers to their _____.
   - ❍ Range
   - ❍ Den
   - ❍ Population
   - ❍ All of the above

5. When values are listed in order of size, the _____ is in the middle.
   - ❍ Median
   - ❍ Lines
   - ❍ Chickens
   - ❍ Range

What's the Answer?

6 The _____ number of clams collected in a day can be referred to as the mean.

- ❍ Gross
- ❍ Greatest
- ❍ Least
- ❍ Average

7 The mode is the value that appears _____ frequently in a set of data.

- ❍ Least
- ❍ Most
- ❍ Never
- ❍ Somewhat

What's the Answer?

ANSWER KEY

1. The justices of the Alaska Supreme Court sometimes have different _____ of the Alaska constitution.
   - ❍ Visions
   - ● Interpretations
   - ❍ Versions
   - ❍ Authors

2. Trends can occur in
   - ❍ Mathematics
   - ❍ Cultures
   - ❍ Fashion
   - ● All of the above

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   - ● Justify
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   - ❍ Lines
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   - ❍ Range

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- ❍ Greatest
- ❍ Least
- ● Average

7 The mode is the value that appears _____ frequently in a set of data.

- ❍ Least
- ● Most
- ❍ Never
- ❍ Somewhat

Reading Comprehension Activity Page

Write the numbers/letters for sentence halves that match.

1	One interpretation of climate change data is that	A	can vary from very poor to very great.
2	During the 1980s, mullets and rat-tails	B	of central tendency.
3	Susan felt that she needed to justify her purchase of cross-country skis	C	were a fashion trend.
4	The range of athletic ability in a group of people	D	by vowing to use them at least four times per winter.
5	The median of a dataset is the measure	E	most frequently in a set of data.
6	The mean number of children born to parents in the U.S.	F	it has happened in the past, is normal, and there is nothing to worry about.
7	The mode is the value that appears	G	is about two.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	One interpretation of climate change data is that	A	can vary from very poor to very great.
2	During the 1980s, mullets and rat-tails	B	of central tendency.
3	Susan felt that she needed to justify her purchase of cross-country skis	C	were a fashion trend.
4	The range of athletic ability in a group of people	D	by vowing to use them at least four times per winter.
5	The median of a dataset is the measure	E	most frequently in a set of data.
6	The mean number of children born to parents in the U.S.	F	it has happened in the past, is normal, and there is nothing to worry about.
7	The mode is the value that appears	G	is about two.

1→ F 2→ C 3→ D 4→ A

5→ B 6→ G 7→ E

Reading Comprehension Activity Page

Cut out the words and glue them under their definitions.

Explanation of results	**Variation between upper and lower limits**	**Prove reasonable**
Occurs most often	**Average**	**Develop in a general direction**
Situated in the middle		

interpretation **trends** **justify** **range**

median **mean** **mode**

Reading Comprehension Activity Page

ANSWER KEY

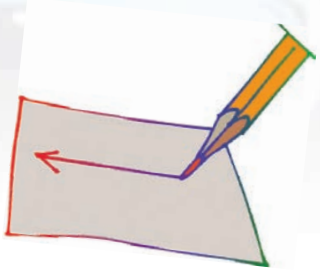
Explanation of results interpretation	**Variation between upper and lower limits** range	**Prove reasonable** justify
Occurs most often mode	**Average** mean	**Develop in a general direction** trends
Situated in the middle median		

STUDENT SUPPORT MATERIALS

Writing

Writing Activity Page

Have the students complete the writing of the key math words.



in_____pretation

t_____ds

j_____tify

r_____ge

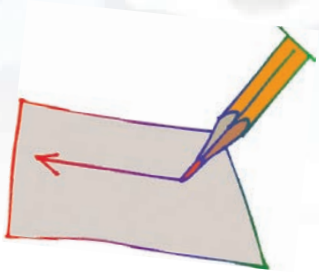
m_____ian

me____n

mo____e

Writing Activity Page

Have the students complete the writing of the key math words.



i_____n

t_____s

j_____y

r_____e

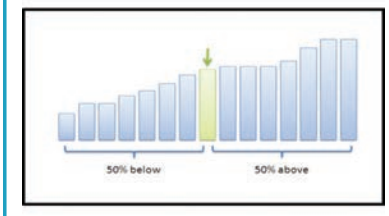
m_____d_____n

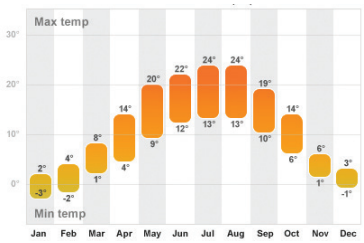
m_____n

m_____e

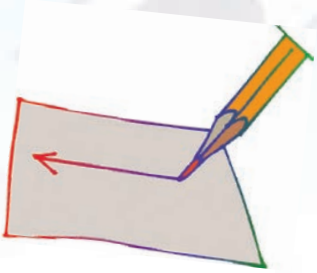
Basic Writing Activity Page

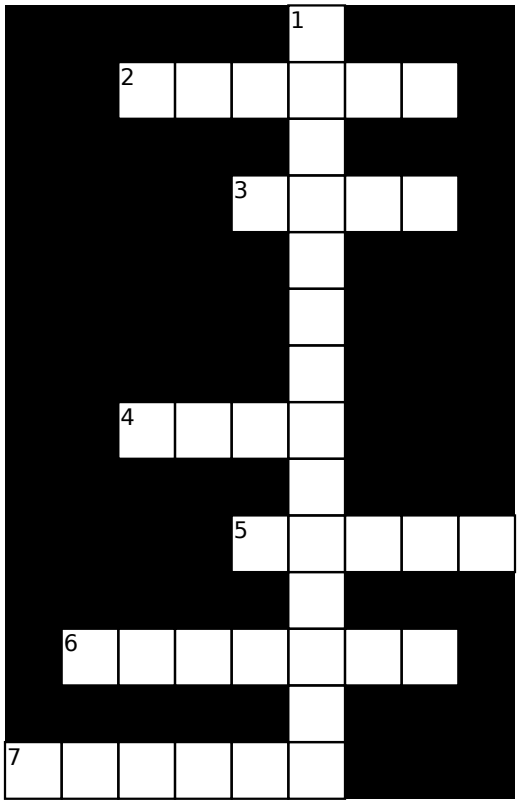
Have the students write the word for each picture.





Crossword Puzzle





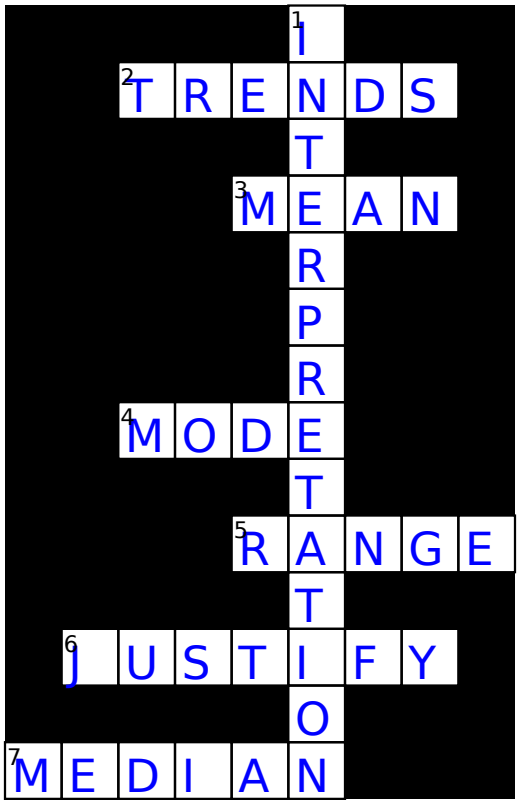
Across

2 Develop in a general direction
3 Average
4 Occurs most often
5 Variation between upper and lower limits
6 Prove reasonable
7 Situated in the middle

Down

1 Explanation of results

Crossword Puzzle Answers



Across

2 Develop in a general direction
3 Average
4 Occurs most often
5 Variation between upper and lower limits
6 Prove reasonable
7 Situated in the middle

Down

1 Explanation of results

UNIT ASSESSMENT

Analysis & Central Tendency

Unit Assessment Teacher's Notes
Grade 8 • Unit 12
Date:_____

Unit Assessment

Provide each student with a copy of the students' pages. Read the following instructions aloud. The students should answer the questions on their copies of the assessment.

BASIC LISTENING

Turn to page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **INTERPRETATION**.
2. Write the number 2 by the picture for **TRENDS**.
3. Write the number 3 by the picture for **JUSTIFY**.
4. Write the number 4 by the picture for **RANGE**.
5. Write the number 5 by the picture for **MEDIAN**.
6. Write the number 6 by the picture for **MEAN**.
7. Write the number 7 by the picture for **MODE**.

SIGHT RECOGNITION

Turn to page 2 in your test. Look at the pictures in the boxes. Circle the word for each picture.

DECODING/ENCODING

Turn to page 3 in your test. Look at the word parts in the boxes. Circle the other half or part of each word.

READING COMPREHENSION

Turn to page 4 in your test. Write each word under its definition.
Refer to Student Support Materials for answer key.

BASIC WRITING

Turn to page 5 in your test. Look at the pictures in the boxes. Write the word for each picture.

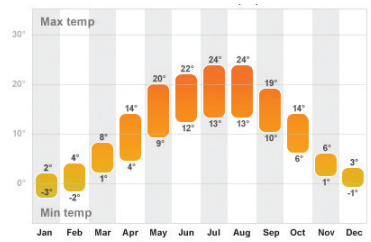
Teacher: To get a percentage for this student's assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.

MATH PROGRAM

Unit Assessment Student Pages
Grade 8 • Unit 12

Date:_____ **Student's Name:_____**

Number Correct:_____ **Percent Correct:_____**


Max temp
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Jan
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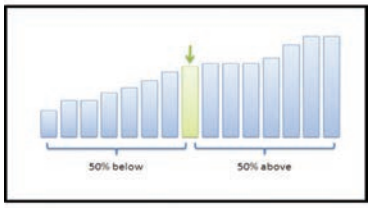
Wrangell
55°
SATURDAY 57° 54°
SUNDAY 57° 52°
MONDAY 59° 52°
TUESDAY 66° 54°
WEDNESDAY 64° 54°
THURSDAY 57° 52°


50% below
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interpretation
trends
justify
range
median
mean
mode

interpretation
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interpretation
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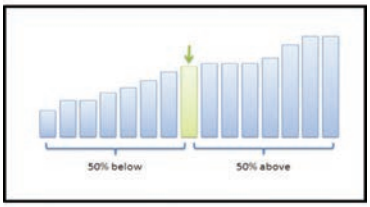

interpretation
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justify
range
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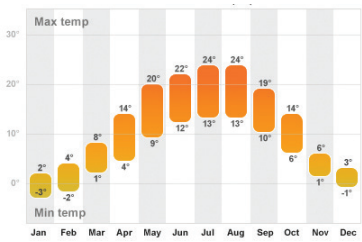

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interpreta____

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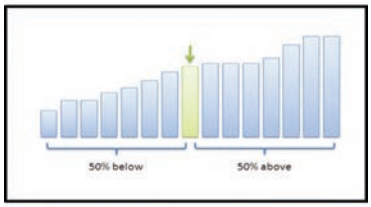
Explanation of results	**Variation between upper and lower limits**	**Prove reasonable**
Occurs most often	**Average**	**Develop in a general direction**
Situated in the middle		

interpretation	**trends**	**justify**	**range**
median	**mean**	**mode**	


50% below
50% above

Wrangell
55°
SATURDAY 57° 54°
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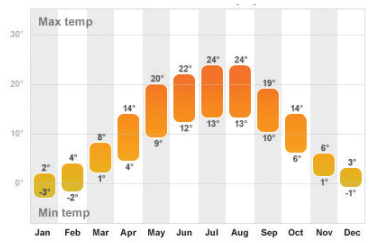
Max temp
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Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec