

# SCRABBLE STATS

## Lesson 3: Scrabble Decoding

### Australian Curriculum: Mathematics (Year 6)

**ACMNA131:** Make connections between equivalent fractions, decimals and percentages.

**ACMSP146:** Compare observed frequencies across experiments with expected frequencies.

### Lesson abstract

Students use their knowledge of letter frequencies in English to decode an excerpt of text.

### Mathematical purpose (for students)

Use what we have learned to break a code.

### Mathematical purpose (for teachers)

Students apply understandings from previous lessons to decode text.

Suggested presentation    One lesson of one hour.

Vocabulary encountered    Lesson materials

- cypher
- encryption
- frequency
- [Student Sheet - Encrypted Text](#)

---

---

We value your feedback after this lesson via our website.

---

---

# Launch

Introduce students to the context of cryptography. Discuss codes and ciphers that students may be familiar with and possible strategies for decoding encoded text.

# Explore

Give students [Student Sheet - Encrypted Text](#). Explain that each letter in the original text has been replaced with a randomly chosen letter, e.g. all “A”s have become “R”s, all “T”s have become “V”s.

Allow students time to decode the text. They should consider how they can use their findings from the previous two lessons to help.

## Enabling Prompt

- *Can you create a frequency table of the letters in the text? How might this help you?*

## Teacher Notes

- Simply replacing each letter with the letter of equivalent frequency produces nonsense. Students need to use the frequency tables in *conjunction* with strategies discussed in the launch stage.
- The text to decode is taken from the opening of Charles Dickens’ *A Christmas Carol*. It was chosen for this purpose due to its repetition of key words, its variation of short and long words, and its combination of familiar and unfamiliar words.

Students should record each step they take to decode the text.

# Reflection

Students come together to confirm their decoded text and discuss their different strategies.

## Teacher Sheet Encrypted Text

DKMASE YKB PSKP: OU GSILV YLOH. OHSMS LB VU PUCGO  
*MARLEY WAS DEAD: TO BEGIN WITH. THERE IS NO DOUBT*  
 YHKOSJSM KGUCO OHKO. OHS MSILBOSM UX HLB GCMLKA  
*WHATEVER ABOUT THAT. THE REGISTER OF HIS BURIAL*  
 YKB BLIVSP GE OHS QASMIEDKV, OHS QASMZ, OHS  
*WAS SIGNED BY THE CLERGYMAN, THE CLERK, THE*  
 CVPSMOKZSM, KVP OHS QHLSX DUCMVSM. BQMUUIS  
*UNDERTAKER, AND THE CHIEF MOURNER. SCROOGE*  
 BLIVSP LO: KVP BQMUUIS'B VKDS YKB IUUP CWUV  
*SIGNED IT: AND SCROOGE'S NAME WAS GOOD UPON*  
 'QHKVIS, XUM KVEOHLVI HS QHUBS OU WCO HLB HKVP OU.  
*'CHANGE, FOR ANYTHING HE CHOSE TO PUT HIS HAND TO.*  
 UAP DKMASE YKB KB PSKP KB K PUUM-VKLA.  
*OLD MARLEY WAS DEAD AS A DOOR-NAIL.*  
 DLVP! L PUV'O DSKV OU BKE OHKO L ZVUY, UX DE UYV  
*MIND! I DON'T MEAN TO SAY THAT I KNOW, OF MY OWN*  
 ZVUYASPIS, YHKO OHSMS LB WKMOLQCAKMAE PSKP  
*KNOWLEDGE, WHAT THERE IS PARTICULARLY DEAD*  
 KGUCO K PUUM-VKLA. L DLIHO HKJS GSSV LVQALVSP,  
*ABOUT A DOOR-NAIL. I MIGHT HAVE BEEN INCLINED,*  
 DEBSAX, OU MSIKMP K QUXXLV-VKLA KB OHS PSKPSBO  
*MYSELF, TO REGARD A COFFIN-NAIL AS THE DEADEST*  
 WLSQS UX LMUVDUVISM LV OHS OMKPS. GCO OHS  
*PIECE OF IRONMONGERY IN THE TRADE. BUT THE*  
 YLBPUD UX UCM KVQSBOUMB LB LV OHS BLDLAS; KVP DE  
*WISDON OF OUR ANCESTORS IS IN THE SIMILE: AND MY*  
 CVHKAAUYSP HKVPB BHKAA VUO PLBOCMG LO, UM OHS  
*UNHALLOWED HANDS SHALL NOT DISTURB IT, OR THE*  
 QUCVOME'B PUVS XUM. EUC YLAA OHSMSXUMS WSM DLO  
*COUNTRY'S DONE FOR. YOU WILL THEREFORE PERMIT*  
 DS OU MSWSKO, SDWHKOLQKAAE, OHKO DKMASE YKB KB  
*ME TO REPEAT, EMPHATICALLY, THAT MARLEY WAS AS*

## Teacher Sheet Encrypted Text

PSKP KB K PUUM-VKLA.

*DEAD AS A DOOR-NAIL.*

BQMUUIS ZVSY HS YKB PSKP? UX QUCMBS HS PLP. HUY  
*SCROOGE KNEW HE WAS DEAD? OF COURSE HE DID. HOW*

QUCAP LO GS UOHSMYLB? BQMUUIS KVP HS YSMS  
*COULD IT BE OTHERWISE? SCROOGE AND HE WERE*

WKMOVSMB XUM L PUV'O ZVUY HUY DKVE ESKMB.  
*PARTNERS FOR I DON'T KNOW HOW MANY YEARS.*

BQMUUIS YKB HLB BUAS STSQCOUM, HLB BUAS  
*SCROOGE WAS HIS SOLE EXECUTOR, HIS SOLE*

KPDLVLBOMKOUM, HLB BUAS KBBLIV, HLB BUAS  
*ADMINISTRATOR, HIS SOLE ASSIGN, HIS SOLE*

MSBLPCKME ASIKOSS, HLB BUAS XMLSVP, KVP BUAS  
*RESIDUARY LEGATEE, HIS SOLE FRIEND, AND SOLE*

DUCMVSM. KVP SJSV BQMUUIS YKB VUO BU PMSKXPXCAAE  
*MOURNER. AND EVEN SCROOGE WAS NOT SO DREADFULLY*

QCO CW GE OHS BKP SJSVO, GCO OHKO HS YKB KV  
*CUT UP BY THE SAD EVENT, BUT THAT HE WAS AN*

STQSAASVO DKV UX GCBLVSBB UV OHS JSME PKE UX OHS  
*EXCELLENT MAN OF BUSINESS ON THE VERY DAY OF THE*

XCVSMKA, KVP BUASDVLBSP LO YLOH KV CVPUCGOSP  
*FUNERAL, AND SOLEMNISED IT WITH AN UNDOUBTED*

GKMIKLV.

*BARGAIN.*

### KEY

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
L	S	U	M	Y	-	B	H	G	V	A	I	R	-	T	D	C	-	E	X	O	N	P	F	W	K

DKMASE YKB PSKP: OU GSILV YLOH. OHSMS LB VU PUCGO  
YHKOSJSM KGUCO OHKO. OHS MSILBOSM UX HLB GCMLKA  
YKB BLIVSP GE OHS QASMIEDKV, OHS QASMZ, OHS  
CVPSMOKZSM, KVP OHS QHLSX DUCMVSM. BQMUUIS  
BLIVSP LO: KVP BQMUUIS'B VKDS YKB IUUP CWUV  
'QHKVIS, XUM KVEOHLVI HS QHUBS OU WCO HLB HKVP OU.  
UAP DKMASE YKB KB PSKP KB K PUUM-VKLA.  
DLVP! L PUV'O DSKV OU BKE OHKO L ZVUY, UX DE UYV  
ZVUYASPIS, YHKO OHSMS LB WKMOLQCAKMAE PSKP  
KGUCO K PUUM-VKLA. L DLIHO HKJS GSSV LVQALVSP,  
DEBSAX, OU MSIKMP K QUXXLV-VKLA KB OHS PSKPSBO  
WLSQS UX LMUVDUVISME LV OHS OMKPS. GCO OHS  
YLBPUD UX UCM KVQSBOUMB LB LV OHS BLDLAS; KVP DE  
CVHKAAUYSP HKVPB BHKAA VUO PLBOCMG LO, UM OHS  
QUCVOME'B PUVS XUM. EUC YLAA OHSMSXUMS WSMDLO

---

DS OU MSWSKO, SDWHKOLQKAAE, OHKO DKMASE YKB KB

---

PSKP KB K PUUM-VKLA

---

BQMUUIS ZVSY HS YKB PSKP? UX QUCMBS HS PLP. HUY

---

QUCAP LO GS UOHSMYLB? BQMUUIS KVP HS YSMS

---

WKMOVSMB XUM L PUV'O ZVUY HUY DKVE ESKMB.

---

BQMUUIS YKB HLB BUAS STSQCOUM, HLB BUAS

---

KPDLVLBOMKOUM, HLB BUAS KBBLIV, HLB BUAS

---

MSBLPCKME ASIKOSS, HLB BUAS XMLSVP, KVP BUAS

---

DUCMVSM. KVP SJSV BQMUUIS YKB VUO BU PMSKPxCAAe

---

QCO CW GE OHS BKP SJSVO, GCO OHKO HS YKB KV

---

STQSAASVO DKV UX GCBLVSBB UV OHS JSME PKE UX OHS

---

XCVSMKA, KVP BUASDVLBSP LO YLOH KV CVPUCGOSP

---

GKMIKLV.

---

## KEY

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z