Academic Communication in Astrophysics Homework 3 — due 07/05/2025

Please note: these problems do not necessarily have only one acceptable solution. Use the principles discussed in class to edit for better communication as instructed.

1) Precise words

Find the nonspecific terms in the following sentences. What are the nonspecific words? Replace the nonspecific choices with more precise terms or phrases. Note that it is generally not necessary to change the sentence structure; just replace the individual words. Guess or invent something if you have to.

1. All infrared-selected galaxies showed enhanced star formation rates.

   Nonspecific: enhanced.

   Revision: All infrared-selected galaxies showed higher star formation rates (0.2dex).

2. Plants were kept in the cold overnight.

   Nonspecific: the cold

   Revision: Plants were kept in $10°C$ overnight.

3. Some exoplanets orbit multiple stars.

   Nonspecific: Some

   Revision: 10% exoplanets orbit multiple stars.

4. Apart from the discussed main band, weaker emissions were observed.

   Nonspecific: weaker

   Revision: Apart from the discussed main band, 10% weaker emissions were observed.

5. (Last sentence in the Introduction) The present paper reports on continuing observations that were performed to clarify this surprising effect.

Nonspecific: surprising

Revision: The present paper reports on continuing observations that were performed to clarify this unexpected effect.

6. The dust emission was greatly affected when the star formation rate increased.

   Nonspecific: greatly affected

   Revision: The dust emission was increased by 2 dex when the star formation rate increased.

7. To provide proof of concept for our hypothesis, we studied a virus in its host cells.

   Nonspecific: provide proof of concept for,

   Revision: To verify our hypothesis, we studied a virus in its host cells.

8. Only some of the region under study exhibits larger reddening.

   Nonspecific: Only some, larger

   Revision: 20% of the region under study exhibits 50% larger reddening.

9. The PAH molecules with the most intense peak at 7.7 microns can be identified with the MIRI instrument on JWST.

   Nonspecific: the most intense

   Revision: The PAH molecules with the most intense peak (a factor of 10) at 7.7 microns can be identified with the MIRI instrument on JWST.

10. The afterglow of the blast wave was markedly brighter than we expected.

    Nonspecific: markedly

    Revision: The afterglow of the blast wave was five times brighter than we expected.

2) Simple words I

Improve the word choice in the following examples by replacing the underlines terms or phrases with simpler word choices. Again, do not change the sentence structure; just change the words.

1. These data substantiate our hypothesis.

   These data support our hypothesis.

2. We <u>utilized</u> UV light to induce Arabidopsis for mutations.

   We <u>use</u> UV light to induce Arabidopsis for mutations.

3. The differences in our results compared to those of Retter et al. (2015) <u>can be accounted for by the fact that different algorithms were used</u>.

   The differences in our results compared to those of Retter et al. (2015) <u>are because we used different algorithms</u>.

4. <u>For the purpose of</u> examining cell migration, we dissected mouse brains.

   <u>For</u> examining cell migration, we dissected mouse brains.

5. Our results <u>are in accordance</u> with Seuter et al. (1988) who measured iP in the culture medium of Physcomitrella transformed with the agrobacterial isopentenyl transferase gene.

   Our results <u>agree</u> with Seuter et al. (1988) who measured iP in the culture medium of Physcomitrella transformed with the agrobacterial isopentenyl transferase gene.

6. <u>We performed a systematic study</u> of the vibrational spectrum of CO2 using various isotopomers.

   We <u>studied</u> the vibrational spectrum of CO2 using various isotopomers.

7. <u>An example of this is the fact that</u> quantum materials differ substantially.

   <u>For example</u>, quantum materials differ substantially.

8. In Swaziland, the number of HIV-infected children increased <u>by an order of magnitude</u> in the past decade.

   In Swaziland, the number of HIV-infected children increased <u>tenfold</u> in the past decade.

3) Simple words II

How many syllables are in each of the underlined words below? Can you predict whether they have Latin, French, or Old English roots? Look up the origins of each of the words, and then rewrite the sentences using as many Old English words as you can without changing the meaning. List the number of syllables and the origins of the shorter words.

1. For example, <u>expansion</u> of the extent of the winter range by <u>continued</u> <u>pioneering</u> of segments of the northern Yellowstone elk herd northward from the park <u>boundary</u> and <u>extensive</u> use of these more northerly areas by greater numbers of elk have been <u>coincident</u> with <u>acquisition</u> and <u>conversion</u> of rangelands from livestock <u>production</u> to elk winter range.

   Expansion: 3, latin

   Continued: 3, French

   Pioneering: 4, french

   Boundary: 2, french

   Extensive: 3, latin

   Coincident: 3, latin

   Acquisition: 4, latin

   Conversion: 3, latin

   Production: 3, latin

2. We conclude that snag <u>retention</u> at <u>multiple</u> <u>spatial</u> and <u>temporal</u> scales in recent burns, which will be salvage-logged, is a <u>prescription</u> that must be <u>implemented</u> to meet the <u>principles</u> of <u>sustainable</u> forest <u>management</u> and <u>maintenance</u> of biodiversity in the boreal forest.

   Retention: 3, latin

   Multiple: 3, latin

   Spatial: 2, latin

   Temporal: 2, latin

   Prescription: 3, latin

   Implemented: 4, latin

   Principle: 3, latin

   Sustainable: 4, latin

   Management: 3, latin

   Maintenance: 3, latin