Coherence and Alignment Among Science Curriculum, Instruction, and Assessment (CASCIA) Project

Grade 8 Unit 4: Providing Solutions to Problems Using Simple Wave Properties

Task 1 Prompt 3 Scored and Annotated Anchor Set

May 2025

Grade 8 Unit 4: Providing Solutions to Problems Using Simple Wave Properties, Task 1 Prompt 3 Scored and Annotated Anchor Set was developed with funding from the U.S. Department of Education under the Competitive Grants for State Assessments Program CFDA 84.368A. The contents of this paper do not represent the policy of the U.S. Department of Education, and no assumption of endorsement by the Federal government should be made.

CASCIA Grade 8 EOU Assessment 4 Task 1: Now You See It
Prompt 3 Score Point 4

Prompt 3 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3	No aspect of the response is correct	Response includes **one (1)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **two (2) of** the **four (4)** correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Does not have a reasonable rationale	Response includes **three (3)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Uses information from Table 2 to support response • Relates frequency and wavelength

Score Point 4 (4/4 aspects met)

- Part A
  - Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves.
- Part B
  - Selects "disagree."
  - Uses information from Table 2 to support response.
  - Relates frequency to wavelength.

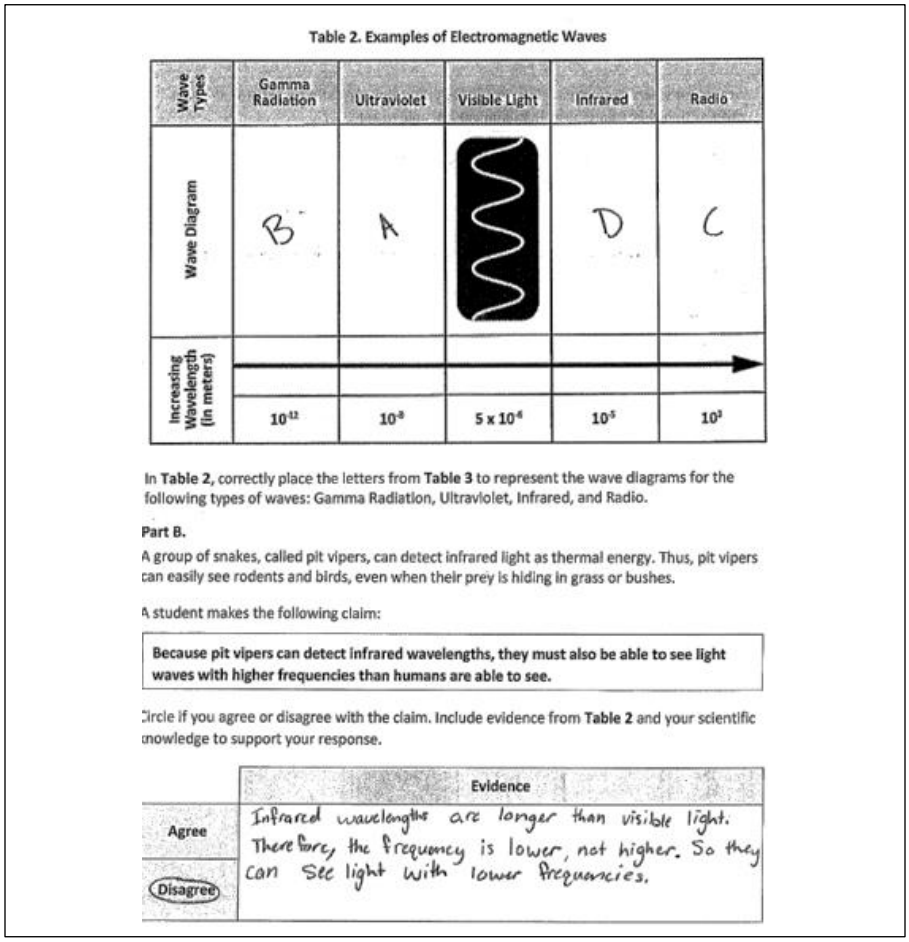


Table 2. Examples of Electromagnetic Waves

Wave Types	Gamma Radiation	Ultraviolet	Visible Light	Infrared	Radio
Wave Diagram	B	A		D	C
Increasing Wavelength (in meters)	10^{-12}	10^{-8}	5×10^{-6}	10^{-5}	10^{3}

In **Table 2**, correctly place the letters from **Table 3** to represent the wave diagrams for the following types of waves: Gamma Radiation, Ultraviolet, Infrared, and Radio.

Part B.

A group of snakes, called pit vipers, can detect infrared light as thermal energy. Thus, pit vipers can easily see rodents and birds, even when their prey is hiding in grass or bushes.

A student makes the following claim:

Because pit vipers can detect infrared wavelengths, they must also be able to see light waves with higher frequencies than humans are able to see.

Circle if you agree or disagree with the claim. Include evidence from **Table 2** and your scientific knowledge to support your response.

	Evidence
Agree	Infrared wavelengths are longer than visible light. Therefore, the frequency is lower, not higher. So they can see light with lower frequencies.
(Disagree)	

CASCIA Grade 8 EOU Assessment 4 Task 1: Now You See It
Prompt 3 Score Point 3

Prompt 3 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3	No aspect of the response is correct	Response includes **one (1)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **two (2) of** the **four (4)** correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Does not have a reasonable rationale	Response includes **three (3)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Uses information from Table 2 to support response • Relates frequency and wavelength

Score Point 3 (3/4 aspects met)

- Part A
  - Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves.
- Part B
  - Selects "disagree."
  - Uses information from Table 2 to support response (student uses nonconventional ". . . behind visible light. . ." implying lower frequency).
  - Does **NOT** relate frequency to wavelength.

Table 2. Examples of Electromagnetic Waves

Wave Types	Gamma Radiation	Ultraviolet	Visible Light	Infrared	Radio
Wave Diagram	B	A		D	C
Increasing Wavelength (in meters)	10^{-12}	10^{-8}	5×10^{-6}	10^{-5}	10^{1}

In **Table 2**, correctly place the letters from **Table 3** to represent the wave diagrams for the following types of waves: Gamma Radiation, Ultraviolet, Infrared, and Radio.

Part B.

A group of snakes, called pit vipers, can detect infrared light as thermal energy. Thus, pit vipers can easily see rodents and birds, even when their prey is hiding in grass or bushes.

A student makes the following claim:

Because pit vipers can detect infrared wavelengths, they must also be able to see light waves with higher frequencies than humans are able to see.

Circle if you agree or disagree with the claim. Include evidence from **Table 2** and your scientific knowledge to support your response.

	Evidence
Agree	Humans can see visable and Pitvipers see lower light beca infrared is behind visable light
(Disagree)	

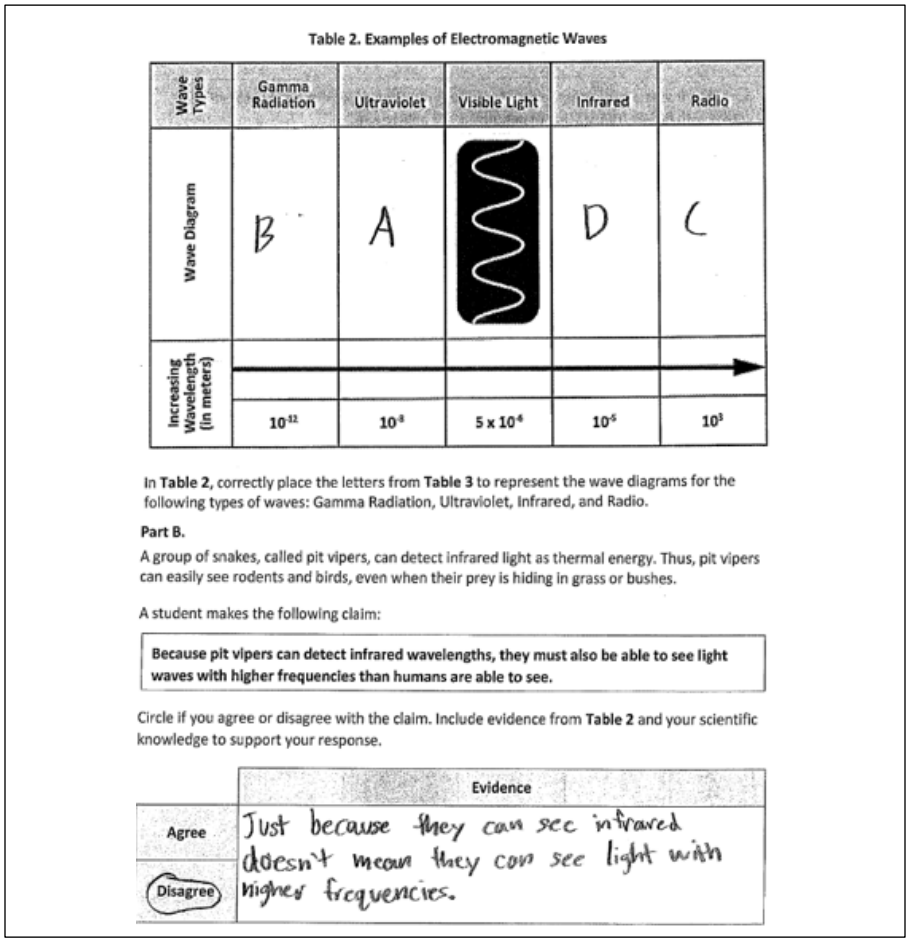
CASCIA Grade 8 EOU Assessment 4 Task 1: Now You See It
Prompt 3 Score Point 2

Prompt 3 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3	No aspect of the response is correct	Response includes **one (1)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **two (2) of** the **four (4)** correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Does not have a reasonable rationale	Response includes **three (3)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Uses information from Table 2 to support response • Relates frequency and wavelength

Score Point 2 (2/4 aspects met)

- Part A
  - Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves.
- Part B
  - Selects "disagree."
  - Does **NOT** use information from Table 2 to support response.
  - Does **NOT** relate frequency to wavelength.



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Wave Diagram	B	A		D	C
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In **Table 2**, correctly place the letters from **Table 3** to represent the wave diagrams for the following types of waves: Gamma Radiation, Ultraviolet, Infrared, and Radio.

Part B.

A group of snakes, called pit vipers, can detect infrared light as thermal energy. Thus, pit vipers can easily see rodents and birds, even when their prey is hiding in grass or bushes.

A student makes the following claim:

Because pit vipers can detect infrared wavelengths, they must also be able to see light waves with higher frequencies than humans are able to see.

Circle if you agree or disagree with the claim. Include evidence from **Table 2** and your scientific knowledge to support your response.

	Evidence
Agree	Just because they can see infrared doesn't mean they can see light with higher frequencies.
(Disagree)	

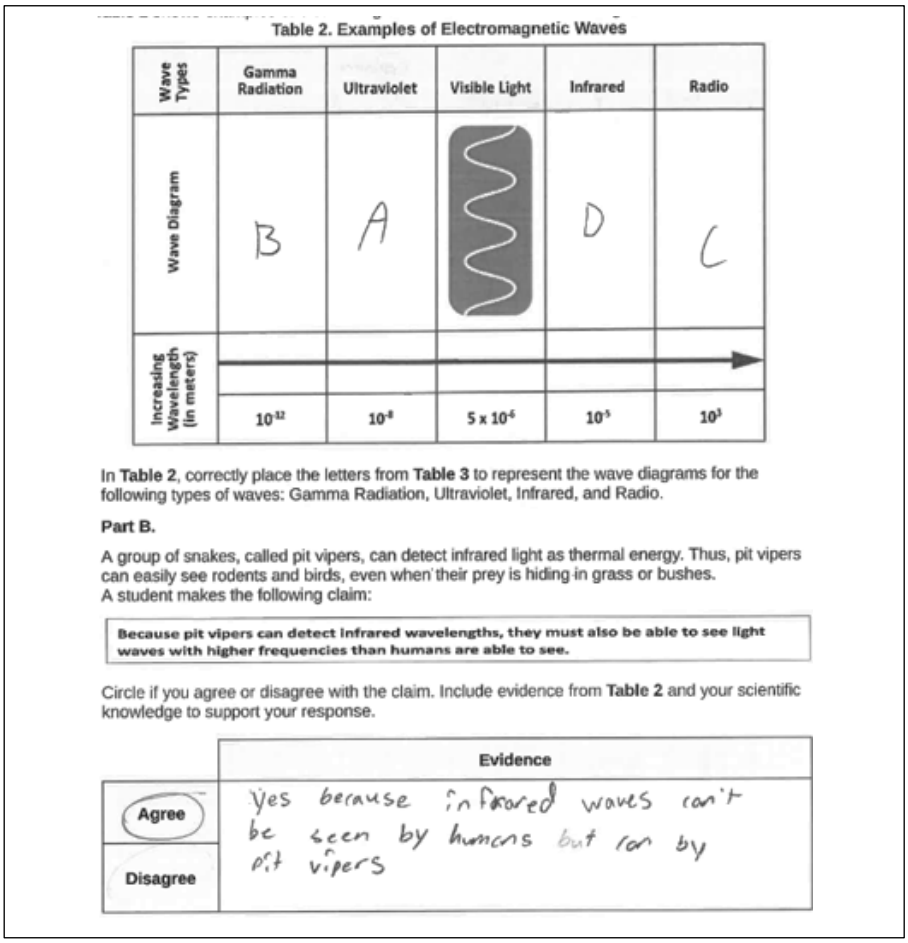
CASCIA Grade 8 EOU Assessment 4 Task 1: Now You See It
Prompt 3 Score Point 1

Prompt 3 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3	No aspect of the response is correct	Response includes **one (1)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **two (2) of** the **four (4)** correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Does not have a reasonable rationale	Response includes **three (3)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Uses information from Table 2 to support response • Relates frequency and wavelength

Score Point 1 (1/4 aspects met)

- Part A
  - Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves.
- Part B
  - Does **NOT** select "disagree."
  - Does **NOT** use information from Table 2 to support response.
  - Does **NOT** relate frequency to wavelength.



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In **Table 2**, correctly place the letters from **Table 3** to represent the wave diagrams for the following types of waves: Gamma Radiation, Ultraviolet, Infrared, and Radio.

Part B.

A group of snakes, called pit vipers, can detect infrared light as thermal energy. Thus, pit vipers can easily see rodents and birds, even when their prey is hiding in grass or bushes.
A student makes the following claim:

Because pit vipers can detect infrared wavelengths, they must also be able to see light waves with higher frequencies than humans are able to see.

Circle if you agree or disagree with the claim. Include evidence from **Table 2** and your scientific knowledge to support your response.

	Evidence
Agree	yes because infrared waves can't be seen by humans but can by pit vipers
Disagree	

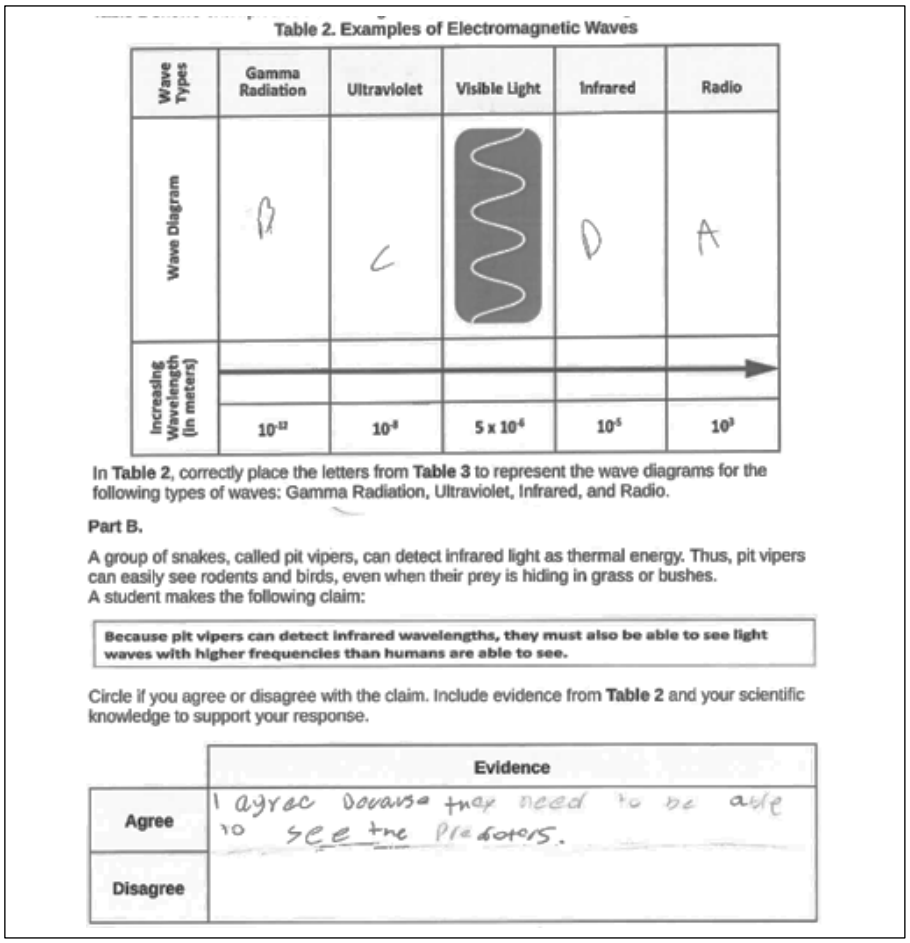
CASCIA Grade 8 EOU Assessment 4 Task 1: Now You See It
Prompt 3 Score Point 0

Prompt 3 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3	No aspect of the response is correct	Response includes **one (1)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **two (2) of** the **four (4)** correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Does not have a reasonable rationale	Response includes **three (3)** of the **four (4)** aspects	Response includes the following aspects: **Part A** • Matches **four (4)** of the correct wavelengths to the types of electromagnetic waves **Part B** • Selects "disagree" • Uses information from Table 2 to support response • Relates frequency and wavelength

Score Point 0 (0/4 aspects met)

- Part A
  - Does **NOT** match **four (4)** of the correct wavelengths to the types of electromagnetic waves.
- Part B
  - Does **NOT** select "disagree."
  - Does **NOT** use information from Table 2 to support response.
  - Does **NOT** relate frequency to wavelength.



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Wave Diagram	B	C		D	A
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A student makes the following claim:

Because pit vipers can detect infrared wavelengths, they must also be able to see light waves with higher frequencies than humans are able to see.

Circle if you agree or disagree with the claim. Include evidence from **Table 2** and your scientific knowledge to support your response.

	Evidence
Agree	I agree because they need to be able to see the predators.
Disagree	