

From the Earth to the Moon, and Beyond!



2022 Teacher Packet

Questions or comments may be directed to the ISO Learning Community. Indianapolis Symphony Orchestra | 32 E. Washington St., Suite 600 | Indianapolis, IN 46204

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The standards used throughout the curriculum are listed at the end of the packet.



Jacob Joyce, Conductor

Jacob Joyce is a conductor from Ann Arbor, Mich. Recently appointed as the Resident Conductor of the Indianapolis Symphony, Jacob is quickly gaining recognition as an innovative and dynamic presence on the podium. Jacob graduated from Yale College in 2014 with a B.A. in Music and Economics. He received a M.M. in Violin Performance from the Yale School of Music in 2015, studying with Syoko Aki.

Jacob most recently served as the Conducting Fellow for the Fort Worth Symphony Orchestra, and has previously held other distinguished positions such as Associate Conductor of the Yale Symphony Orchestra. Jacob is also an accomplished violinist. He has performed with several orchestras nationwide, and was awarded the Broadus Erle Prize for an Outstanding Violinist at the Yale School of Music. He served as the concertmaster of the Yale Symphony Orchestra, and performed regularly with the Boston Philharmonic and the Atlantic Symphony. He has previously attended the Tanglewood Music Center, the Bowdoin International Music Festival, and Encore School for Strings



William Shatner, Narrator

William Shatner is a Canadian actor born in 1931. He began his career as a child performing in radio broadcasts, and continued to pursue acting into adulthood. He has performed both on stage and on screen throughout his career, but is probably most famous for his portrayal of the character Captain Kirk on the TV show *Star Trek*.



Dr. Barrett Caldwell, Narrator

Prof. Caldwell conducts research in applying human factors and industrial engineering principles to team performance in complex task environments. His early research examined the potential social and technological effects of Internet multimedia communications, even before the release of the Mosaic browser in 1993. Prof. Caldwell's discovery of the importance of information delay with increasing bandwidth has been meaningful since the growth of Internet file sharing, which demonstrated that delay remains a concern to ensuring satisfactory quality of service.

Prof. Caldwell's research group is known as the Group Performance Environments Research (GROUPER) Laboratory. The mission of the GROUPER Lab is to be a premier research group in the areas of analysis, design and improvement of how humans work with, and share knowledge through, information and communication technology systems on Earth and in space. His work, and that of GROUPER, is internationally recognized for integrating social and technical considerations in human task coordination and team performance.





Cora Walker, Narrator

Cora Walker is an 8th grader at Paul Hadley Middle School. She enjoys studying math, science, and the arts at school, and is looking forward to a career as an astronaut for NASA. She loves anything social with friends and family, outdoor activities, science-related special events like Space Day at Purdue University, acting, singing, attending Link Observatory Learning Events, and playing violin in the Metropolitan Youth Orchestra. She is a cross-country runner and swims on the middle school teams. Her cross-country team won their regional this year. She is a member of National Junior Honor society and does mission work through her church. She was also chosen to spend a week at Goddard Space center in Maryland to meet with women who work in STEM.

Richard Strauss

1864–1949 | German

Pronunciation: Strowss

Richard Strauss began composing music at age six, however, his first symphony premiered at age 17 and his second at 20. Having been taught music under the watchful eye of his conservative father, Franz Strauss, it is almost surprising that Richard Strauss's music shocked the world!

Influenced by Wagner and Liszt, Strauss wrote his first tone poems. With their literary programs and dramatic depiction of events, these works led his artistic interests toward the theatre and in 1894, he wrote his first opera. The music of Strauss challenged earlier conventions with his uncharacteristic instrument writing (writing music for trombone as if it were a piccolo) and use of dissonance (clashing sounds).



In 1933, Nazis came to power in Germany. Strauss was confronted with a crucial decision—to leave Germany or remain in his homeland. Staying in Germany, he was given the position of president of the Reichsmusikkammer (Reich Chamber of Music). For him, this created an uneasy relationship with the Nazi government. Because his daughter-in-law and grandsons were of Jewish ancestry, Strauss was forced to make a deal with the Nazis for their protection. After his opera *Die schweigsame Frau* was withdrawn by the Nazis because the author of the book, Stefan Zweig, was Jewish, Strauss was asked to resign his post.

A fun story about Strauss details how he and his future wife, a singer in the opera house in Munich, had an argument during rehearsal. Strauss went to her dressing room to smooth things over and emerged an engaged man!

Richard Strauss died quietly in 1949 at age 85.



Written in 1896, the title of this piece can be translated as, "Thus Spoke Zarathustra." It is considered to be a tone poem (descriptive music), and it was based on a famous work by Friedrich Nietzsche. It was made "extra famous" in recent history when it was featured in the film 2001: A Space Odyssey. The film debuted in 1968, but is still very popular today.

What you will hear:

Strauss—Introduction from Also sprach Zarathustra

Questions to discuss before and as you listen:

The trumpet is featured at the beginning of the piece—how would you describe the way it sounds? What musical family does it belong in? Does it play short, disconnected notes (staccato), or long, connected ones (legato)?

It is a brass instrument—you make a sound by buzzing your lips. It has a full, bold sound. It plays notes that are long and legato (smooth and connected).

Music Standards: 3-5(LR.6.5.3) and 6-8(LR.6.8.3)

The dynamics (volume of the music) change throughout the piece. Does it start *forte* (loud) or *piano* (soft)? Does it end loud or soft?

It starts out soft, then builds in the middle, and ends with a big, loud finish! Music Standards: 3-5(LR.5.5.1) and 6-8(LR.5.8.1)

The first three notes played by the trumpets followed by the "bah-bum" played by the rest of the orchestra is an iconic part of the piece. It's recognized by people far and near. On a piece of paper or white board, write down your guess of how many times this pattern is featured throughout the piece. Does it get stuck in your head?

I hear it happen 3 times. Yes—it's very catchy!

Music Standards: 3-5(LR.6.5.3) and 6-8(LR.6.8.3 Math Standards: 3.NS.1, 4.NS.1



An instrument called the timpani are featured in this piece—they are a type of drum that can play notes with different pitches (unlike a snare drum that really only has one pitch). Can you hear them? Why do you think the composer chose to use them?

I can hear them! They make the piece sound exciting and powerful.

Music Standards 3-5(LR.6.5.3) and 6-8(LR.6.8.3)

Listening Map

The beginning of the piece is extremely quiet, then gradually crescendos. The trumpet fanfare is composed using intervals that make it sound bold and vast. Throughout the piece the fanfare is featured three times, each more boisterous than the last, resulting in a heroic sound at the finish.

- 2:56 Extremely quiet strings, organ, and contrabassoon sustain a low, rumbling note.
- **3:10** Softly, trumpets play a fanfare, a 3-note phrase that represents "dawn." The music grows louder (a crescendo), the tonality changes from major to minor and then we are surprised by two boisterous chords that almost sound like the instruments saying "ta-da" or "bah-bum." The timpani respond loudly.
- 3:32 The same pattern repeats, but everything is gradually a little louder.
- **3:52** The same pattern repeats for a third time; this time the dynamics are very loud and bold, with a crescendo to the end of the phrase.
- **4:12** The entire orchestra continues to play, carrying the energy through to the end. The piece finishes with a majestic chord.

Questions and activities to try after you listen:

Create a piece of visual artwork that depicts the sunrise that you think is in this piece. What does it look like? Will you use multiple images, or just one large image? What colors/media would you use? Why?

Any answers are acceptable as long as students can explain.

Visual Art Standards: VA:Cn10.1.3a (4a, 5a, 6a)

Choose a type of drum in your classroom. What instrument family does it belong in? How do you make a sound? What causes the actual sound? How would you make a louder sound on a drum? How about a quieter sound?

It is a percussion instrument, so you strike or scrape the drum to make a sound. When I strike the drum, it causes vibrations. Those vibrations cause differences in air pressure, which create sound waves. Science Standards 3.PS.3, 3.PS.4 Music Standards 3-5(P.8.5.1) and 6-8(P.8.8.1)

How would you depict a sunrise using movement? Develop a movement piece for one of the opening phrases (either solo or in a group). Feel free to use props like parachutes, scarves, ribbons, mallets, etc.

Music Standards 3-5(LR.6.5.1), 6-8(LR.6.8.1), 3-5(Cn.2.5.2), and 6-8(Cn.2.8.2)

This piece is sometimes used to depict a sunrise. What do you know about sunrises? Do you think the music does a good job of helping you imagine a sunrise? Do a think/pair/share and come up with your answer—remember to tell us why/why not.

The sun rises in the east and sets in the west because of the way the Earth orbits the sun. The moon can also be seen at times in the day sky depending on its orbit. A sunrise starts with just a little bit of light and then is very bright by the time it has fully risen. Yes—the fact that the music starts small and builds to a big ending is just like the amount of light we can see on Earth.

Science Standards - 4.ESS.1, 5.ESS.1, 6.ESS.1 Language Arts Standards - 3.SL.1 (4.SL.1, 5.SL.1, 6.SL.1)

Gustav Holst

1874–1934 | English

Pronunciation: Wholest

Gustav Holst was born in England. As a child, Holst had terrible eyesight and asthma, so he had a slightly later beginning to his musical studies that other composers. His mother was a piano teacher, and his father played organ, so it was no surprise that Holst himself loved playing piano! However, after experiencing troubles with his neuritis in his hands, he decided to focus on learning to play the trombone.

After studying music in school, he went on to make a career as a musician, composer, and teacher. He mainly composed orchestral, opera, choral, and chamber music. Some of his main artistic influences were the works of Arthur Sullivan, Richard Wagner, and Johann Sebastian

A fun fact about Holst is that he met Ralph Vaughn Williams in 1895, and it was the beginning of a life-long friendship. Vaughn Williams introduced him to English folk music, and they shared their love of music and poetry.





This piece is one movement in a larger work called *The Planets* that features compositions based on Mars, Venus, Mercury, Jupiter, Saturn, Uranus, and Neptune. It remains one of his most popular works to this day. The movement we are listening to is based on the planet Mars, and it is one of the most often performed movements of *The Planets*. It has a war-like, march feel and features the string and brass sections.

What you will hear:

Holst—"Mars" from The Planets

Questions to discuss before and as you listen:



Mars is the 4th planet from the sun. It is smaller than Earth, and it is known as the "Red Planet" for its color. Mars is very dusty (rust colored dust) and is known to have large dust storms. During a close approach (the time when the orbits of the two planets come closest together) the distance between them is approximately 33.9 million miles.

Music Standards: 3-5(Cn.1.5.1) and 6-8(Cn.1.8.1), 3-5(Cn.2.5.1) and 6-8(Cn.2.8.1) Science Standards: 5.ESS.1 and 6.ESS.3

2 Knowing that the Roman god Mars was also referred to by Holst (and others) as "the Bringer of War," do some research to find out more about Mars. Share what you learned with a partner or in a group. Based on what you learned, what do you think the piece will sound like? Make a prediction or hypothesis. What will the dynamics be? What instrument families will be featured? Will it have balanced harmonies, or clashing sounds?

I think it will be bold and the dynamics will be mostly forte/loud. I am predicting that there will be lots of drums and brass. The harmonies will probably be both balanced and clashing.

Language Arts Standards: 3.SL.1 (4.SL.1, 5.SL.1, 6.SL.1) 3.S.: 2 (4.SL.2, 5.SL.2, 6.SL.2); Music Standards: 3-5(Cn2.5.2) and 6-8(Cn.2.8.2), 3-5(LR.5.5.1) and 6-8(LR.5.8.1)

At the beginning, the string players are instructed in the music to play "col legno" which means "with wood" in Italian. The instrumentalists use the back part of their bows (opposite the hair) to tap their strings. Does it make them sound smooth/legato or short and separated/staccato? Do you like the way it sounds? Why/why not? Listen for the horns and woodwinds. Do they sound legato or staccato?

It makes them sound staccato. I like it because it sounds like a small animal tiptoeing. The horns and woodwinds are playing long and legato notes.

Music Standards: 3-5(LR.6.5.3) and 6-8(LR.6.8.3)

3



This piece uses a repeated rhythmic pattern (ostinato). Can you hear it? Can you decode it/figure out what it is? Perform it using body percussion. Perform it on pitched/ unpitched percussion.

The rhythm is pictured below. You can decode it with any variety of rhythm syllables ex: triplet, ta, ta, titi, ta.

Music Standards: 3-5(P.8.5.1) and 6-8(P.8.8.1)



Listening Map

6:15	The piece opens with strings and	8:04	Brass takes over the ostinato
	percussion playing the rhythmic ostinato	8:13	Percussion takes over ostinato
7:10 Swells ir woodwi	Swells in the brass and strings and	8:21	Swells in the entire ensemble
	woodwinds	8:45	Trombone solo
7:43	Original ostinato returns but is being bowed on the strings	9:01	Whole ensemble plays together until it builds to a bold ending

Questions and activities to try after you listen:

It has a march feel, but is actually 5/4 time instead of the 4/4 time we're used to feeling. That means 5 beats per measure instead of 4. Can you conduct using the 5/4 pattern? Create some rhythmic patterns using this time signature. Perform them solo or in groups using body percussion, spoken syllables, or unpitched/pitched percussion instruments

Music Standards: 3-5(Cr.11.5.2) and 6-8(Cr.11.8.2), 3-5(LR.6.5.1) and 6-8(LR.6.8.1)

2 Create your own original character that you think might use this piece of music as their theme song. Draw a picture of the character and write a few words/sentences to describe them. Share with a group or the whole class.

My character is Apollo. He's 16-feet tall and a giant robot. He was built to protect Earth from meteor showers and protects all life on the planet. He can smash meteors with his fist and send them flying back into the atmosphere. His home is in the mountains, and he uses water to regenerate his power.

Visual Art Standards: VA:Cn10.1.3a (4a, 5a, 6a) Language Arts Standards: 3.SL.2.5 (4.SL.2.5, 5.SL.2.5, 6.SL.2.5)

If you had to measure the distance from Earth to Mars during a close approach how far would it be in feet, miles, kilometers, and meters? How many double bass instruments or clarinets would you have to stack end on end to get to Mars? See chart below. Depending on your grade level, feel free to leave certain boxes blank for your students to solve.

Measurement	Distance	Text
Feet	178,992,000,000	178 billion, 992 million feet
Miles	33,900,000	33.9 million miles
Meters	54,556,762,000	54 billion, 556 million, 762 thousand miles
Kilometers	54,556,762	54 million, 556 thousand, 762 kilometers
Double Bass*	29,832,000,000	29 billion, 832 million double basses
Clarinet*	89,496,000,000	89 billion, 496 million clarinets

Math Standards: 3.M.2, 4.M.2, 5.M.1, 6.GM.1

If you have ever played a version of the Super Mario Nintendo© game, you might have heard the music on the airship levels. It has some surprising similarities to "Mars"! Check out this website to hear some of the different versions of the music in the game levels. https://www.mariowiki.com/Airship_Theme What similarities can you hear between Mars and the game music? What differences can you hear? Which one do you prefer?

There are similarities in the repeated rhythms and the overall mood of the music. The instrument sounds are different in the game versions - they sound digital like a keyboard or synthesizer.

Music Standards: 3-5(Cn.1.5.1) and 6-8(Cn.1.8.1), 3-5(Cn.2.5.2) and 6-8(Cn.2.8.2)

Claude Debussy

1862–1918 | French

Pronunciation: Deb-you-see

Debussy didn't grow up in an especially musical household. His father owned a china shop and his mother was a seamstress. Thank goodness for Debussy's wise aunt! He thought he should be a painter, his father thought he should join the navy, but his aunt insisted that he take piano lessons. He attended the Paris Conservatory to study piano, but eventually decided to focus on his compositions instead.

He met his first love, Madame Vasnier, while working as an accompanist for a voice teacher. In the meantime, Monsieur Vasnier became a friend and mentor to Claude. The Vasniers'

daughter recalls Debussy's method of composition and general demeanor: "When he had found what he wanted, he began to write. He made few corrections, but he spent a long time working things out in his head and at the piano before he wrote. He was rarely satisfied with his work He was very quick to take offense and extremely sensitive. The slightest thing put him in good humor or made him sullen or angry. He was very unsociable and never hid his displeasure when my parents invited friends, for he did not often allow himself to be with strangers."

He could be moody, and wasn't well-received by everyone, but Debussy continued creating regardless of what people thought. His music became popular during his lifetime, even though critics labeled it as "impressionistic." (In his time, this term was negative, and criticized a lack of form.) He became friends with many of the biggest names in music, art, and literature and composed pieces that we still love today.

Holmes, The Illustrated Lives of the Great Composers: Debussy



Clair de Lune's English translation means "Moonlight." The title comes from the poem written by Paul Verlaine. Although *Clair de Lune* was the final title, its original title was *Promenade Sentimentale*, which means "Sentimental Stroll." This first title came from a different poem of Paul Verlaine's, "Paysages Tristes" ("Sad Landscapes"). The title was changed to *Clair de Lune* only right before it was published. No matter where the inspiration originated, the music mimics the meditative melancholy of both poems quite well. Although *Clair de Lune* has become so popular by itself, one might not realize that it is actually the third movement of a much larger work, *Suite Bergamasque*.

https://theconversation.com/decoding-the-music-masterpieces-debussys-clair-de-lune-79765

What you will hear:

Debussy—*Clair de Lune*

Questions to discuss before and as you listen:

What are some things you know about the moon? Here are some sample questions: Is it made of cheese? Is there gravity there? Does it rise and set like the sun? Can you ever see the moon during the day? Does the Earth revolve around the moon or vice versa? Does the moon affect the weather here on Earth?

The moon is not made of cheese, and there is no man that lives in it. It does have gravity, but much less than Earth. The moon does have gravitational forces on Earth that affect our tides, and our tides affect our weather (whatever part of the Earth is closest the moon at any given time experiences more pull). The moon rises in the east and sets in the west. You can sometimes see the moon in the daytime sky. The moon revolves around

the Earth, and the Earth revolves around the sun.

Science Standards: 3.ESS.1, 4.ESS.1, 5.ESS.1, and 6.ESS.1

This piece represents moonlight through music. Master teacher Brent Gault at the IU Jacobs School of Music has graciously shared a lovely melody about a "little moon" that you can sing with your students to get them thinking about the moon. Try it on your recorder as well!

Musical Standards: 3-5(P.7.5.1) and 6-8(P.7.8.1)

Lunita

Hispanic Lullaby Learned from Carlos Abril (Used with Permission)





How do you feel when you look at the moon? If you were going to write a piece of music that represented the moon, what kinds of instruments, tempo (speed), and dynamics (loudness/quietness) would you use? Why?

I feel peaceful and full of wonder when I look at the moon. I would choose instruments like the metallophone, triangle, and rain stick because they are magical-sounding. My piece would be mostly quiet because I imagine it is quiet on the moon.

Musical Standards: 3-5(Cn.1.5.1) and 6-8(Cn1.8.1)



Brent Gault also recommends that you check out some visual art: *The Effect of Moonlight* by Eugene Boudin and *The Starry Night* by Vincent van Gogh. Describe some artistic techniques they used. Do you like these paintings? Why/why not? Do you think they match the music? Why/why not?

Yes! I like them because the colors are soft and cool like the sound of the music. There is a heavy use of paint, bold but gentle colors, and short, pronounced brushstrokes.

Music Standards: 3-5(Cn.2.5.2) and 6-8(Cn.2.8.2) Visual Art Standards: VA:Re9.1.3a (4a, 5a, 6a)

Listening Map

12:11	A Main melodic motif/theme. Strings are the main voice.
12:47	A Main melodic motif/theme. Woodwinds are the main voice.
13:12	B New melodic motif/theme with strings and woodwinds together that build to a cadence with the harp floating on top.
14:02	C New motif that has an ascending/rolling melody/motif.
15:25	C Same motif continues, but a violin solo carries it.
15:45	A' Variation on original theme, not quite the same tonality/harmony.
16:21	A' Another slight variation on the original theme, not quite the same tonality.
16:55	Coda Repeating wave-like melody/motive that leads to a gentle ending.

Questions and activities to try after you listen:

If you had to choose a style of dance/movement to match this piece of music, what would you choose? How would you describe it?

I would choose ballet because it is legato/smooth, connected, elegant, and graceful.

Musical Standards: 3-5(Cn.2.5.2) and 6-8(Cn.2.8.2)

How do you think the composer felt about the moon? Do you think he liked it or didn't? What kinds of emotions do you think he associated with it? Why?

I think he liked the moon and found it peaceful because he used gentle, smooth, and beautiful melodies in his piece. The dynamics did get loud, but the overall feel was still happy. It didn't sound scary or excited, it was very happy and peaceful.

Musical Standards: 3-5(Cn.3.5.1) and 6-8(Cn.3.8.1)

If this music was used in a movie, what type of scene (other than just looking at the moon) do you think would be happening? You can do this solo or in groups. Describe it verbally, draw it, or write a short script.

Any answer is acceptable as long as the student(s) can explain the connection.

Musical Standards: 3-5(Cn.2.5.2) and 6-8(Cn.2.8.2) Language Arts Standards: 3.SL.2.5 (4.SL.2.5, 5.SL.2.5, 6.SL.2.5)

Sometimes musicians and composers decide to take pieces of music that already exist and put their own spin on them. Isao Tomita changed the instrumentation of the piece and made it unique for a film score. Take a listen to this version: www.youtube.com/watch?v=cL7HcWlyFes. Use a Venn diagram or have a conversation where you compare/contrast the two pieces of music.

Similar aspects: Melodies and form are the same, tempo is the same, etc. Different aspects: Instruments, overall feel, etc. Musical Standards: 3-5(Cn.1.5.1) and 6-8(Cn1.8.1)

James Beckel

b. 1948 | American

Pronunciation: Bek-uhl

James Beckel was born in Marion, Ohio, and graduated from Indiana University. He joined the Indianapolis Symphony Orchestra in 1969, and retired from his position of Principal Trombone in 2018 after an impressive 49 seasons. He is on the faculty of DePauw University, where he has performed as soloist with both their band and orchestra and as a recitalist.

He is internationally respected as a composer, his works having been performed by most of America's orchestras and recorded by several orchestras and concert bands.

Mr. Beckel has received many composition grants. He has been an Individual Arts Fellow through the Indiana Arts Commission and the National Endowment for the Arts, and recently was one of 50 composers chosen nationwide to be part of the Continental Harmony Project. *Liberty for All* was written for that commission from Composers Forum. His piece *The Glass Bead Game* was nominated for a Pulitzer Prize.

He and his wife, a retired project manager, are the parents of a son who is a financial analyst in New York City, and a daughter who is second horn in the Indianapolis Symphony. Mr. Beckel is fascinated by space, and was very excited to celebrate the 50th anniversary of the moon landing in summer 2019!



Here's a note from the composer:

"From the Earth to the Moon and Beyond is a programmatic work. Many composers including Beethoven, Gustov Holst, and especially Richard Strauss used this technique whereby the music is created to describe a story. Beethoven in his pastoral Sixth Symphony uses this technique to create the image of a summer storm. Holst used the mythical characters of the planets of our solar system to write his work *The Planets*. Strauss used the inspiration of books and stories to bring to life in music. A good example of this is his Don Quixote tone poem. The basis for my music in *From the Earth to the Moon and Beyond* is related to a text that I created to celebrate the 50th anniversary of the Apollo moon landing, which was on July 20, 2019.

In creating this text I used speeches from American presidents and quotes from astronauts along with a story line that describes how we achieved this monumental task based on the history of science and astrophysics' theories. The music is a reflection on where we have come as a human race and where we hopefully will go."

Questions to discuss before and as you listen:



2

The ISO was the first to play this piece for its WORLD PREMIERE in 2019! It was written to celebrate the 50th anniversary of the moon landing that happened on July 20, 1969.

Music Standards: 3-5(Cn.3.5.1) and 6-8(Cn.3.8.1)

The very beginning of the piece represents the beginning of the world. How did the composer use music to portray this? *The music is very piano (quiet) and legato (smooth) at the beginning. It fades, and then there is a burst of forte (loud) sounds!* Music Standards: 3-5(Cn.2.5.1), 6-8(Cn.2.8.1), 3-5(LR.5.5.1), and 6-8(LR.5.8.1)

What do you know about our solar system? What objects make up our solar system? Do you know the planets? Can you make a general representation of our solar system by assigning students to be the sun, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Earth's moon?

See the picture for help! Science Standards: 3.ESS.1, 4.ESS.1, 5.ESS.1, 6.ESS.1, 6.ESS.2, and 6.ESS.3



The music sounds a little different from 20:40-20:56. How would you describe it? Why do you think the composer chose it?

It is chaotic and the instruments are playing all kinds of crazy notes! There are a lot of clashing and frantic-sounding melodies. The composer is representing the rapidly expanding universe and all of the different objects in space. Music Standards: 3-5(Cn.2.5.1), 6-8(Cn.2.8.1), 3-5(LR.5.5.1), and 6-8(LR.5.8.1)

Something special happens at 23:11. The music (and narration) represents the moment of the very first time astronauts stepped foot on the moon in 1969. How does the music create an exciting mood?

The melodies and harmonies at this point in the music go together very nicely, and the instruments sound heroic. The tempo (speed) of the music speeds up a little as well, which makes it exciting.

Music Standards: 3-5(Cn.2.5.1), 6-8(Cn.2.8.1), 3-5(LR.5.5.1), and 6-8(LR.5.8.1)



Listening Map

19:27	A	This describes the emptiness before time and space began. Notice the stillness of the music with most instruments sustaining a concert A. The interruption of this tonality in the cello glissandos to G# foreshadow the creation of our universe.
20:40	B	This music represents the beginning of our universe, which some theories refer to as an unbelievable, chaotic explosion. Notice the sudden loud sounds from the orchestra in contrast to the very quiet opening to this composition.
20:57	C	The rhythmic motion of the orchestra is very fast here, mimicking the effect of 'Cosmic Inflation' where our universe was expanding faster than the speed of light. Listen to how fast the violins and violas are playing.
21:22	D	The music is imitating the moment in our universe when the first hydrogen stars are creating visible light. You will hear different instruments enter into the texture of the orchestra in a bell-like fashion, representing these stars lighting up for the first time.
21:52	E	This melody is meant to represent the creation of our earth and the life that followed. Notice that this melody is then used throughout the rest of this piece in different forms.
23:35	F	As mentioned above, the melody first heard at 1:45 as a beautiful soaring song is used here as a celebrative fanfare of successfully putting Neil Armstrong and Buzz Aldrin on the moon. Notice that the orchestration and treatment of the melody can totally change our impression of the same tune.
24:14	G	The music here is meant to imitate the passing of time as the text describes the history of science. You can imagine the sound of a clock ticking in this section.
24:31	H	The composer uses the first known melody in his piece as the narrator describes ancient scientists. You can almost see Greek scholars in robed garments worn at this time in history. Does this conjure up music from our past? It should.
24:51	I	In this moment, you hear a medieval dance that is similar to the music that the 16t ^h century scientist Copernicus would have heard as he speculated about earth's rotation around the sun. Notice the finger cymbals and triangle, popular instruments of the time.
25:05	J	The music depicts the effect of gravity on apples falling as the text talks about Newton's theories or gravity. Newton was actually hit by an apple falling from a tree, which initiated his curiosity about gravity. Listen for the melody descending in pitch.
26:02	K	A grand chorale is heard here as the music celebrates the United States classifying the moon landing as a peaceful mission for all mankind, referencing a plaque that was left on the moon's surface for posterity. Notice how effective the brass is in creating the sounds of grandeur.
26:44	L	This moment in the piece is a little spooky and foreboding, describing the mood of our country during the Cold War. This relates to the moon landing as the race to the moon occurred as a result of the conflicts between Russia and the United States. Look up history of this period. Search for Cuban Missile Crisis.
27:03	Μ	This music is patriotic in nature as we remember President Kennedy challenging the U.S. to put men on the moon before 1970. Listen for the hymn-like quality of this music. Notice that the music is very sustained and quiet and how the use of snare and bass drum add to the patriotic feel of this music.
27:43	Ν	The music is reverent here, describing the country's remorse for astronauts who have lost their lives in the pursuit of space exploration. Notice the upward motion of the melodies in this section, musically imaging President Reagan's eulogy.
28:59	0	The music goes back to an uplifting mood as the text talks about all that we have accomplished. Do you hear the musical effect of time passing and the ticking clock in this section? It's there.
30:45	P	In the closing moments of the piece, the music is bold and wondrous as the future of mankind and space exploration is contemplated. Remember the melody we first heard at 1:45 celebrating life on earth? You can hear it in this ending moving twice as fast. Composers call this technique diminution. Beethoven even used this technique.

Questions and activities to try after you listen:

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Take a look at the book *One Giant Leap* by Robert Burleigh with paintings by by Mike Wimmer. It features historical information about the moon landing in 1969 along with incredible paintings.

Read the book aloud (you may want to divide it up over a few class periods) and do a think/pair/share to discuss 5 to 10 things that students learned. OR have students get in groups and read a section of the book, then share with the class the main 2 or 3 things they learned.

Music Standards: 3-5(Cn.3.5.1) and 6-8(Cn.3.8.1) Science Standards: 3.ESS.1, 4.ESS.1, 5.ESS.1, 6.ESS.1, 6.ESS.2, and 6.ESS.3

The narration and music in this piece of music represents that fact that it takes people working together and learning from each other to accomplish incredible things. Have you experienced this in your own life? Share your story with the class or write a quick paragraph about it.

"One time I was having trouble with a math problem. A friend helped me work it out, and then I was able to help her with another problem! One time my bike got stuck in the mud. My friend pushed while I pulled, and we got it unstuck!" Etc.

Language Arts Standards: 3.SL.2.5 (4.SL.2.5, 5.SL.2.5, 6.SL.2.5)

Dr. Caldwell is a professor of Aeronautics and Astronautics at Purdue University. He said that one challenge astronauts face during their time in space is a lack of visual stimulation. It's great to look out the window from time to time, but there is often just vastness, and that can start to make astronauts feel depressed and alone. Astronauts can't pack a lot of extra stuff for their journey because they have to be mindful of how much weight/matter is on the spacecraft. They also have to keep in mind that not everything works the same way as it did on Earth because of the changes in gravity (e.g., guitars don't play the same way, painting would not be a good idea ...).

Using the technology that you're familiar with (solo, or in groups), can you figure out a way to help solve this problem? Create a prototype or share your idea verbally with the class.

They can take an iPad loaded with pictures of their families and things they like. Students can recommend or create an app where astronauts can "paint" or "Photoshop" images. Students can brainstorm how to change current instruments or design new instruments that they think will work well in space. Etc.

Technology Standards: ETE – 2.2 Engineering Standards: 3-5(3-5.E.1) and 6-8(6-8.E.1) Music Standards: 3-5(Cn.2.5.1) and 6-8(Cn.2.8.1)

If you had to measure the distance from Earth to the moon, how far would it be in miles, feet, kilometers, and meters? How many double bass instruments or clarinets would you have to stack end on end to get to Jupiter? See chart below. Depending your grade level, feel free to leave certain boxes blank for your students to solve.

Measurement	Distance	Text
Feet	1,261,154,400	1 billion, 261 million, 154 thousand, 400
Miles	238,855	238 thousand, 855
Meters	384,400,00	384 million, 400 thousand
Kilometers	384,000	384 thousand
Double Bass*	210,192,400	210 million, 192 thousand, 400
Clarinets*	630,577,200	630 million, 577 thousand, 200

Math Standards: 3.M.2, 4.M.2, 5.M.1, 6.GM.1

*Note: Double basses are approximately 72 inches per instrument and clarinets are approximately 24 inches per instrument.

On the next page, you will find the narrations that accompany the live performance of this piece. Do you think the composer did a good job of matching the music to the script? Why/why not?

I do think he did a good job matching the music to the words. The music sounds exciting when the narration mentions big accomplishments, and wondrous when explaining the theories behind our understanding of space.

Music Standards: 3-5(LR.6.5.3), 6-8(LR.6.8.3), 3-5(Cn.3.5.1), and 6-8(Cn.3.8.1)

"From the Earth to the Moon and Beyond" Speeches

First Narration: Before the universe began, astrophysicists like Stephen Hawking believed that there was no space or time...There was simply nothing ... Then there was a very special moment ... when time and space ... energy and matter ... began in one singular moment ... it is the theory that scientists call "the Big Bang."

Second Narration: Within the first second of the creation, the universe was more than 17,000 times hotter than our sun, expanding faster than the speed of light.

Third Narration: Then 250 million years later... give or take a day or two, scientists believe the first hydrogen stars began to form, ignite, and become bright—let there be light.

Fourth Narration: From the origin of time to the creation of our planet, and from the beginning of life on earth to our existence today, we have been explorers, curious about what lies beyond that next hill, mountain, or lake. From Africa to Eurasia, we traveled with that same curiosity. From North America to South America we wandered with wonderment and awe, and in 1969 with that same curiosity and wonder, we traveled to the moon. From the beginning of our existence on earth, our eyes have looked up at the night sky to see the moon. But on July 20th, 1969, two men looked up at the night sky and saw the Earth. Neil Armstrong and Buzz Aldrin stepped onto the moon. The Eagle had landed and there was "One small step for man, one giant leap for mankind".

Fifth Narration: Putting men on the moon was an achievement made possible by the greatest minds throughout history. Our understanding of the universe is constantly evolving. 3,000 years ago we thought that the earth was flat. It was not until the 6th century B.C that the Greek philosopher Pythagoras first suggested that the earth was round. Yet even the great minds of Plato and Aristotle thought that the sun revolved around the earth. It was not until the 16th century that Nicolaus Copernicus suggested that the earth revolves around the sun. It was another 150 years before Sir Isaac Newton defined the mystical properties of gravity on all things large and small—including apples. 230 years went by before Albert Einstein better clarified Newton's law of gravity as curvatures in space and time.

Sixth Narration: All of our knowledge is cumulative. It is the combined effort of men and women, past and present, who have enabled us to achieve great things that are bigger than any one of us. In 1969, two men stepped onto the surface of the moon, but in essence we all walked on the moon that night. As stated on a plaque left behind, "We came in peace for all mankind."

Seventh Narration: At the height of the cold war in 1962, President John F. Kennedy inspired and challenged our nation to put men on the moon with the following words: "We choose to go to the moon! We choose to go to the moon in this decade and do the other things not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win."

Eighth Narration: Kennedy's goal of space exploration has not been without hardship and sacrifice. Brave and heroic astronauts died in the tragedies of Apollo 1 and the space shuttles "Challenger" and "Columbia." President Reagan's 1986 eulogy to the nation mourned the loss of the "Challenger" crew with the following words: "They had that special grace, that special spirit that says, 'Give me a challenge and I'll meet it with joy.' They had a hunger to explore the universe and discover its truths. We will never forget them, nor the last time we saw them as they prepared for their journey . . . waved goodbye, and 'slipped the surly bonds of earth' to 'touch the face of God.'"

Ninth Narration: Since putting men on the moon, we now have an international space station circling our planet. Our cell phones connect us daily to the entire world, this as a result of our space program. The Hubble telescope, launched into earth's orbit in 1990, has viewed into distant space; back in time, to the beginning of our universe, showing us stunning pictures of distant galaxies. Our understanding of reality continues to evolve and expand. When looking at earth from space, there are no national borders. Conflicts that divide people become less important, and it is imperative that we all work together to protect this precious ... pale ... blue dot in space that is our home.

Tenth Narration: Planet earth—we all share this world together. What we can accomplish is limited only by our imagination and will to act. In 1969, two men walked on the surface of the moon. It was one small step for man, one incredible leap for mankind.... From the Earth... to the Moon... and Beyond!

The Apollo 11 lunar module, the Moon, and the Earth.





Felix Mendelssohn

1809–1847 | German Pronuncia

Pronunciation: Mehn-dehl-son

Felix Mendelssohn was born into a wealthy and cultured family. His father built a successful banking operation, while his mother taught language, music and art to her children. Mendelssohn played in public for the first time when he was nine years old, and was composing symphonies, operas, and small ensemble works by the time he was twelve. Mendelssohn and his sister, Fanny, were both talented at piano, violin, languages, and drawing. Since it was not the custom for women to be composers, Felix published some of her works under his own name. In exchange, she provided valuable critique and suggestions for his pieces.

Mendelssohn's father decided to convert from the Jewish faith to Protestantism because he knew that many opportunities in the fine arts were closed to Jewish people. In some cases, Mendelssohn's name is written as Felix Mendelssohn-Bartholdy, reflecting the conversion to Christianity.



Because he began composing at such a young age, Mendelssohn wrote a great deal of music during his short, thirty-eight year lifespan. Unlike some composers who were never appreciated until after their death, Mendelssohn was immediately hailed as a celebrity, and was recognized as one of the leading composers, conductors, and pianists of his time.

In May 1847, Mendelssohn received news that his beloved sister, Fanny, had died. This news devastated Mendelssohn so much that he fainted and ruptured a blood vessel in his brain. Less than six months later, at age 38, he died, and the whole music world grieved the loss—memorial services were held in cities all over Europe.



This music was actually composed as "incidental music" (music that accompanies the action or scene changes) for a performance of Shakespeare's play *A Midsummer Night's Dream*. This particular movement in the show portrayed an enchanted fairy world, and a magical character called Puck. Puck is very mischievous and loves to have fun—some say he is portrayed specifically by the flute.

What you will hear:

Mendelssohn—"Scherzo" from a Midsummer Night's Dream

Questions to discuss before and as you listen:

What do you notice about the tempo (speed) of the music? Does it change much throughout the piece? It is a very quick tempo throughout the whole piece.

Music Standards: 3-5(LR.5.5.1) and 6-8(LR.5.8.1)

2 What instrument families are prominent in this piece? How do woodwind instruments make a sound?

The strings and woodwinds are featured in this piece. Woodwind instruments make a sound by blowing air through a mouthpiece/reed. This causes vibrations. String instruments make a sound by plucking or drawing a bow across the strings to cause vibrations. Those vibrations cause differences in air pressure, which create sound waves. Music Standards 3-5(LR.6.5.3) and 6-8(LR.6.8.3)



One specific instrument has a solo in this piece. Which instrument is it? How would you describe the sound it makes? *It is supposed to represent a playful character named Puck. The flute. It has a high, gentle sound—it plays a lot of fast notes.* Music Standards 3-5(LR.6.5.3), 6-8(LR.6.8.3), 3-5(Cn.3.5.1), and 6-8(Cn.3.8.1)



Do any of the melodies from the beginning of the piece come back later? Is anything predictable in the music? Yes! There are actually a lot of repeated melodies throughout the piece, kind of like patterns with theme and variation.

The melody from the beginning definitely comes back at the end. Musical Standards: 3-5(LR.5.5.1) and 6-8(LR.5.8.1)

Listening Map

- 33:23 Woodwinds dance.
- **33:35** Strings begin a melody that ascends and builds louder (party/shenanigans).
- 33:46 The end of the phrase comes to a cadence (stopping point), and hands it back to the gentle woodwinds.
- **33:52** The string melody from 0:12 returns again, in the same way.
- 34:03 Again, the end of the phrase comes to a cadence (stopping point), and hands it back to the gentle woodwinds.
- **34:09** The familiar, building string melody returns for a third time, but it goes in a slightly different direction this time.
- 34:31 A new melody where the strings are the main, playful melody and the woodwinds accent what is happening.
- **34:55** The timpani mark another small cadence where the dynamics are quieter.
- **35:09** A flute solo floats over the rest of the orchestra.
- **35:25** Woodwind melody from the beginning returns and builds.
- 35:55 The string-focused motive from 1:04 returns.
- 36:27 The flute solo becomes prominent again, the rest is accompaniment, it fades to a gentle, playful ending.

Questions and activities to try after you listen:

William Shakespeare lived from 1564 to 1616. He became famous for writing many famous plays. *A Midsummer Night's Dream* is a comedy he wrote where the human world collides with the fairy world. Do you know anything about him? Do you have any questions for me?

Language Art Standards: 3.SL.3.2 (4.SL.3.2, 5.SL.3.2, 6.SL.3.2)

What classroom instruments would you use to represent a magical, moon-filled scene? Compose a 4–8 measure phrase using conventional or unconventional notation and perform it for the class.



I would use a metallophone, triangle, guiro, and temple blocks. Here is my notation/plan, and here is my performance.

Music Standards: 3-5(P.8.5.1), 6-8(P.8.8.1), 3-5(Cr.11.5.2), and 6-8(Cr.11.8.2)

Read the book *If You Decide to Go to the Moon* by Faith McNulty with illustrations by Steven Kellogg together as a class or individually. How does this book portray the moon using line, texture, color, and shape? Do you think it matches the feel of the music? Can you create something totally different that still represents the moon?

The lines are curvy and fuzzy, the texture is thick and fuzzy, the colors pop off the page, and the shapes have soft edges. I do think it represents the music well because it is gentle but playful.

Visual Art Standards: VA:Re9.1.3a (4a, 5a, 6a) and VA:Cn10.1.3a (4a, 5a, 6a)

Based on the music, what do you imagine the character Puck is like? If you had to move about the classroom like Puck, what would it look like? Create a short movement piece (solo or in groups) to go with part of this piece and perform it for the class.

I imagine he is mischievous and jumps around all over. He like to take short flights with spins and twirls. Musical Standards: 3-5(LR.6.5.1) and 6-8(LR.6.8.1)

Gustav Holst

1874–1934 | English

Pronunciation: Wholest

Gustav Holst was born in England. As a child, Holst had terrible eyesight and asthma, so he had a slightly later beginning to his musical studies that other composers. His mother was a piano teacher, and his father played organ, so it was no surprise that Holst himself loved playing piano! However, after experiencing troubles with his neuritis in his hands, he decided to focus on learning to play the trombone.

After studying music in school, he went on to make a career as a musician, composer, and teacher. He mainly composed orchestral, opera, choral, and chamber music. Some of his main artistic influences were the works of Arthur Sullivan, Richard Wagner, and Johann Sebastian.

A fun fact about Holst is that he met Ralph Vaughn Williams in 1895, and it was the beginning of a life-long friendship. Vaughn Williams introduced him to English folk music, and they shared their love of music and poetry.



What you will hear:

st—"Jupiter, Bringer of Jollity" from *The Planets*

Questions to discuss before and as you listen:

When Holst wrote this piece, it was probably based more on the Roman god Jupiter rather than based on clear, accurate photos of the planet that we see today. However, the music represents the god and the actual planet equally well. What kinds of things do you know about the planet Jupiter? How far away is it from Earth?

Jupiter is the 5th planet from the sun and it is the largest. It has colorful rings and a "great red spot." Jupiter's volume could contain at least 1,300 Earths inside of it. It has a very strong magnetic field, and spins faster than the rest of the planets in our solar system.

Musical Standards: 3-5(Cn.1.5.1) and 6-8(Cn1.8.1) Science Standards: 5.ESS.1 and 6.ESS.3

2 Listen for the brass to play the main melody at the beginning as the strings play a repeated pattern. Are they playing fast or slow notes? Are they loud or quiet? What kind of scene do you imagine happening?

They are playing fast notes, and they are loud! I imagine running/chasing someone or having an exciting experience!

Music Standards: 3-5(Cn.1.5.1) and 6-8(Cn1.8.1)

This whole piece can be divided up into three, large, general sections in a form of ABA'. Can you hear when the big changes happen? To check your knowledge, get up and move around during the B section only in a way that matches the mood of the music.

Yes! [*A* = 0:00 – 2:53, *B* = 2:54 – 4:40, *A*′= 4:41 – end]

Musical Standards: 3-5(LR.5.5.1), 6-8(LR.5.8.1), 3-5(LR.6.5.1), and 6-8(LR.6.8.1)

The string section is featured during the "Thaxted" hymn section in the middle. How would you describe their sound? How does a string instrument make a sound? What instruments make up the string family?

Their notes sound smooth and connected, the volume/dynamics are a little quieter, and the sound is a little more serious. A string instrument makes a sound by plucking (pizzicato) the strings or drawing a bow (arco) across the strings. This causes vibrations, which cause differences in air pressure. This creates sound waves. The string family includes violin, viola, cello, bass, and others.

Music Standards: 3-5(LR.5.5.1) and 6-8(LR.5.8.1) Science Standards: 3.PS.4



Jupiter as seen by the space probe Cassini.



This piece is one movement in a larger work called *The Planets* that features compositions based on Mars, Venus, Mercury, Jupiter, Saturn, Uranus, and Neptune. The movement we are listening to is based on the planet Jupiter. It is the largest planet in our solar system, and the fourth brightest object in the sky (after the sun, moon, and Venus).

The Jupiter movement is the most "English" sounding in the suite. Its musical theme is based on the hymn tune *Thaxted* that Holst wrote for his church. Thaxted is the name of the Essex town where Holst played organ. You may find this tune familiar as it is sung in many churches. At that time, it was, and sometimes still is, sung to words written by Sir Cecil Spring-Rice, "I vow to thee, my country."

Questions and activities to try after you listen:

If you had to create a space-themed product and use this music in the commercial for it, what kind of product would you create? Who would use the product? What would it do? What would the commercial be like? If you have time, create a prototype of the product and film your commercial to share with you class!

I would create a vacuum cleaner that sucks up space junk! We could train special astronauts to help clean up space!

Engineering Standards: 3-5(3-5.E.1) and 6-8(6-8.E.1)

Listen to the piece *Clair de Lune*. Make a Venn diagram to compare and contrast the pieces discussing things like instrumentation, tempo (speed), dynamics (volume), length, mood, etc.

Different: most of the tempo except for the middle section of Jupiter, dynamics, mood Similar: length, instrumentation...etc.

Musical Standards: 3-5(LR.5.5.1) and 6-8(LR.5.8.1)

3

If you had to measure the distance from Earth to the Moon, how far would it be in miles, feet, kilometers, and meters? How many double bass instruments or clarinets would you have to stack end on end to get to Jupiter? See chart below. Depending your grade level, feel free to leave certain boxes blank for your students to solve.

Measurement	Distance	Text
Feet	1,261,154,400	1 billion, 261 million, 154 thousand, 400
Miles	238,855	238 thousand, 855
Meters	384,400,00	384 million, 400 thousand
Kilometers	384,000	384 thousand
Double Bass*	210,192,400	210 million, 192 thousand, 400
Clarinets*	630,577,200	630 million, 577 thousand, 200

*Note: Double Basses are approximately 72 inches per instrument and clarinets are approximately 24 inches per instrument.

Math Standards: 3.M.2, 4.M.2, 5.M.1, 6.GM.1

4

There is a part of the A Section of the piece (0:58 – 1:20) that sounds like it is perfect for a dance. Working solo, or in small groups, can you create a short movement piece/dance that matches the mood of the music? Bonus points for different levels and shapes... and if there is no "flossing" involved. Musical Standards: 3-5(LR.6.5.1) and 6-8(LR.6.8.1)

A dynamic storm at the southern edge of Jupiter's northern polar region dominates this Jovian cloudscape, courtesy of NASA's Juno spacecraft.

The Apollo 11 Saturn V space vehicle lifted off with Astronauts Neil A. Armstrong, Michael Collins, and Edwin E. "Buzz" Aldrin Jr. 9:32 a.m. EDT July 16, 1969, from Kennedy Space Center's Launch Complex 39A

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OTHER ACTIVITIES:

Write a Review!

Writing a review is a great way to foster communication skills in students. There are no wrong opinions, as long as the students can explain their thoughts effectively through their writing.

Review Writing Prompt Examples:

Write a critique of the performance. Using musical terms, discuss what you liked or disliked about the performance.

Did you have a favorite part of the performance? What did you think about while listening to the music?



Did you have a favorite instrument? What would you choose to play if you had the opportunity to perform with the Orchestra?

We love getting letters from our audience members! Reviews of the performance may be mailed to:

The Learning Community, Indianapolis Symphony Orchestra 32 East Washington Street, Suite 600, Indianapolis, IN 46204

Discuss in a Literature Circle!

Make enough copies of the composer pages for all students in the class. Divide the class into groups and give them 5 to 10 minutes of silent reading time for each composer. Assign one student in each group the duty of also watching the clock. Go around the circle with each student telling what they found most interesting about the composer. Discussions are encouraged!

Draw from the Music!

Make sure everyone has a blank sheet of paper and drawing utensils, anything from crayons to coloring pencils to regular pens and pencils. Play a recording of a musical selection from this packet and tell students to draw whatever the music inspires to them. (If needed, play the selection more than once to allow students to complete their drawing.)

Afterwards, have all the students sit in a circle. Go around the circle with each student asking what they drew and what about the music inspired that drawing.

Indiana Academic Standards Covered in Community Health Network *Discovery Concert* FY22

Engineering

- **3-5(3-5.E.1)** Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.
- **6-8(6-8.E.1)** Identify the criteria and constraints of a design to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

Language Arts

3.SL.1 (4.SL.1, 5.SL.1, 6.SL.1)	Listen actively and adjust the use of spoken language to communicate effectively with a variety of audiences and for different purposes.
3.SL.2 (4.SL.2, 5.SL.2, 6.SL.2)	Engage effectively in a range of collaborative discussions on grade-appropriate topics and texts, building on others' ideas and expressing personal ideas clearly.
3.SL.2.5 (4.SL.2.5, 5.SL.2.5, 6.SL.2.5)	Explain personal ideas and understanding in reference to the discussion.
3.SL.3.2 (4.SL.3.2, 5.SL.3.2, 6.SL.3.2)	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Math

- **3.M.2** Choose and use appropriate units and tools to estimate and measure length, weight, and temperature. Estimate and measure length to a quarter-inch, weight in pounds, and temperature in degrees Celsius and Fahrenheit.
- **3.NS.1** Read and write whole numbers up to 10,000. Use words, models, standard form, and expanded form to represent and show equivalent forms of whole numbers up to 10,000.
- **4.NS.1** Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000.
- **4.M.2** Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Express measurements in a larger unit in terms of a smaller unit within a single system of measurement. Record measurement equivalents in a two column table.
- **5.M.1** Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.
- **6.GM.1** Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems.

Music

- **3-5(Cn.1.5.1)** Demonstrate and explore how personal interests and skills relate to choices when creating, performing, and responding to music.
- 6-8(Cn1.8.1) Identify and demonstrate individual preference for music that is performed, created, and/or listened to in daily life.
- 3-5(Cn.2.5.1) Discover, identify, and explore how music connects to language arts and/or science, mathematics.
- 6-8(Cn.2.8.1) Describe and explore how the study of music applies to language arts, mathematics, and/or science.
- 3-5(Cn.2.5.2) Discover, identify, and explore how music connects to other arts and humanities.
- **6-8(Cn.2.8.2)** Compare and describe how the characteristic elements of music and the other arts can be used to depict and/or transform events, scenes, emotions, and/or ideas into works of art.
- **3-5(Cn.3.5.1)** Identify, explore, and perform music associated with historical periods and connect to state, regional, and national events.
- **6-8(Cn.3.8.1)** Identify, describe, and perform the distinguishing characteristics of musical works from a variety of genres, styles, historical periods, and cultures.
- 3-5(LR.5.5.1) Define expressive music terms and apply them to selected musical examples.
- 6-8(LR.5.8.1) Recall, explore, comprehend, and apply appropriate music vocabulary.
- **3-5(LR.6.5.1)** Use conducting and other types of movement to demonstrate rhythmic patterns and simple and compound meters).

Music (Continued)

- **6-8(LR.6.8.1)** Explore the muscular sensations of time and energy through the performance of choreographed movement, including conducting, both in place and in space.
- **3-5(LR.6.5.3)** Identify and express age appropriate music concepts including form, phrasing, expressive qualities, and timbre through movement in listening examples, singing games, and/or simple folk dances.
- **6-8(LR.6.8.3)** Identify and express age appropriate music concepts including form, phrasing, expressive qualities, and timbre through movement in listening examples, singing games and/or simple folk dances.
- **3-5(P.7.5.1)** Sing in groups and independently, while demonstrating appropriate breath control, pitch, diction, tone quality, and posture.
- **6-8(P.7.8.1)** Sing accurate pitches and rhythms, as modeled and/or visually notated, with appropriate intonation, breath control, diction, and tone quality throughout one's singing range.
- **3-5(P.8.5.1)** Play pitched and unpitched percussion, keyboard, string, and/or wind instruments using correct techniques for producing sound.
- **6-8(P.8.8.1)** Play accurate pitches and rhythms, as modeled and/or visually notated, in tune with a steady beat, good tone quality, and appropriate technique throughout the known range of the instrument(s).
- 3-5(Cr.11.5.2) Create, notate, and perform songs in a variety of meters.
- **6-8(Cr.11.8.2)** Utilize both traditional and/or non-traditional notation to compose short pieces within specified guidelines and demonstrate one's knowledge of the elements of music and how they might be used to create unity or variety, tension and release, and/or balance.

Science

- **3.PS.3** Generate sound energy using a variety of materials and techniques, and recognize that it passes through solids, liquids, and gases.
- **3.PS.4** Investigate and recognize properties of sound that include pitch, loudness (amplitude), and vibration as determined by the physical properties of the object making the sound.
- **3.ESS.1** Obtain and combine information to determine seasonal weather patterns across the different regions of the United States.
- **4.ESS.1** Investigate how the moon appears to move through the sky and it changes day to day, emphasizing the importance of how the moon impacts the Earth, the rising and setting times, and solar lunar eclipses
- **5.ESS.1** Analyze the scale of our solar system and its components: our solar system includes the sun, moon, seven other planets and their moons, and many other objects like asteroids and comets.
- 6.ESS.1 Describe the role of gravity and inertia in maintaining the regular and predictable motion of celestial bodies
- **6.ESS.2** Design models to describe how Earth's rotation, revolution, tilt, and interaction with the sun and moon cause seasons, tides, changes in daylight hours, eclipses, and phases of the moon.
- 6.ESS.3 Compare and contrast the Earth, its moon, and other planets in the solar system, including comets and asteroids.

Technology

ETE – 2.2 Apply knowledge and skills learned in science, mathematics, language arts, fine arts, and social studies classes when completing engineering and technology-based assignments.

Visual Art

VA:Cr1.1.3a (4a, 5a, 6a)	Generate and conceptualize artistic ideas and work.
VA:Re9.1.3a (4a, 5a, 6a)	Apply criteria to evaluate artistic work.
VA:Cn10.1.3a (4a, 5a, 6a)	Synthesize and relate knowledge and personal experiences to make art.

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