



Shadows Unit Overview

You can use the Shadows unit structure as shown here, or you may wish to vary the unit structure to meet your class's needs, for example: spread activities out over multiple days, repeat key activities to reinforce learning, revisit songs during class transitions, or extend Small Group conversations at the full-class Circle-Time: Wrap-Up.

Week 1: Making Shadows			
SHADOWS	Lesson 1	Lesson 2	Lesson 3
	Children become aware of their own shadows.	Children cast their own shadows and object shadows.	Children continue to cast their own shadows and object shadows.
Circle Time: Introduction	<p>Introducing Shadows (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Locate and discuss hand shadows. <p>Guess Whose Shadow? by Stephen R. Swinburne (read-aloud) 5 mins.</p> <ul style="list-style-type: none"> Read <i>Guess Whose Shadow</i>. <p>Cool Shadows (digital journal) 5 mins.</p> <ul style="list-style-type: none"> Photograph shadows with the <i>Cool Shadows</i> camera. 	<p>3, 2, 1 Flashlight! (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Locate and discuss shadows. <p>Shadow Play, Levels 1–2 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. 	<p>Outdoor Shadows (video) 5 mins.</p> <ul style="list-style-type: none"> Watch a video of children making outdoor shadows. <p>I Have a Little Shadow (chant) 5 mins.</p> <ul style="list-style-type: none"> Act out words of the classic poem.
Small Group	<p>Watch My Shadow Move (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Explore making shadows move and change. 	<p>Guess Whose Shadow? by Stephen R. Swinburne (read-aloud) 5 mins.</p> <ul style="list-style-type: none"> Read <i>Guess Whose Shadow</i>. <p>Mystery Shadows Photos (digital journal) 10-15 mins.</p> <ul style="list-style-type: none"> Stage and photograph mystery shadows. 	<p>Shadow Structures (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> Build a block structure and observe the shadows it casts. <p>Simon Says Make a Shadow (hands-on) 20 mins.</p> <ul style="list-style-type: none"> Play a Simon Says shadow game using positional word clues.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. ©/© 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

WK 1: SHADOWS	Lesson 1	Lesson 2	Lesson 3
<p>Learning Centers</p>	<p>I Can Make Shadows (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Cast shadows on a shadow wall. <p>Cool Shadows Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Review photos of interesting shadows. 	<p>I Can Make Shadows (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Cast shadows on a shadow wall. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Explore how shadows are made. <p>Cool Shadows Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Review photos of interesting shadows. 	<p>I Can Make Shadows (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Cast body shadows on a shadow wall. <p>My Own Shadow Maker (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Create a collage and watch shadows it makes. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Explore how shadows are made. <p>Outdoor Shadows (video) 5 mins.</p> <ul style="list-style-type: none"> • Watch a video of children making outdoor shadows. <p>Shadow Structures (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Build a block structure and observe the shadows it casts. <p>Mystery Shadows Game (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Play a digital shadow guessing game.
<p>Outdoors</p>	<p>Wave to Your Shadow (outdoors) 5-15 mins.</p> <ul style="list-style-type: none"> • Take photos of your shadow moving. <p>Little Shadow Dance With Me (song) 5 mins.</p> <ul style="list-style-type: none"> • Sing and move to a shadow song. 	<p>Shadow Hunt (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Hunt for shadows to match specific descriptions. 	<p>Shadow Walk (outdoors) 10-15 mins.</p> <ul style="list-style-type: none"> • Make combined shadows outdoors.
<p>Circle Time: Wrap Up</p>	<p>Cool Shadows Review (digital) 5-10 mins.</p> <ul style="list-style-type: none"> • Review photos of interesting shadows. <p>Little Shadow, Dance With Me (song) 5 mins.</p> <ul style="list-style-type: none"> • Sing and move to a shadow song. 	<p>Shadow Hunt Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Discuss <i>Shadow Hunt</i> photos. <p>Nothing Sticks Like a Shadow by Ann Tompert (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Read <i>Nothing Sticks Like a Shadow</i>. 	<p>Mystery Shadows Game (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Play a digital shadow guessing game.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. © 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Week 2: Changing Shadows: Move the Object or Light

SHADOWS	Lesson 4 Children explore how shadows change when an object moves.	Lesson 5 Children explore how shadows change when the light moves.	Lesson 6 Children explore big and small shadows.
Circle Time: Introduction	<p>Shadows Big & Small, Part 1 (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move an object closer to the light and observe shadow changes. <p>Shadow Play, Levels 3-5 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. 	<p>Shadows Big & Small, Part 2 (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Predict and test shadow size changes. <p>Shadow Play, Level 10 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. 	<p>Shoebox Shadow Theater (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move a light to make big, small, and clear shadows. <p>Shadow Cave, Levels 1-6 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Make big and small shadows to fill an outline on a cave wall.
Small Group	<p>Charting Shadows Big & Small (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Record a ball's shadow size as it moves closer to the light. 	<p>Charting Shadows Big & Small (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Record a ball's shadow size as it moves closer to the light. <p>Move the Light (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Notice how a shadow changes when a light is moved. 	<p>Move the Light (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Notice how a shadow changes when a light is moved. <p>Design a Shadow Theater Space (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Plan and design a space for shadowbox theater shows.
Learning Centers	<p>Making Shadow Puppets (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> Create shadow puppets. <p>Shadows Big & Small, Part 1 (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move an object closer to the light and observe shadow changes. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. <p>Shadow Hunt Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> Discuss <i>Shadow Hunt</i> photos. <p>Large Shadow Theater (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> Cast shadows on a large sheet. 	<p>Shadows Big & Small, Part 2 (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Predict and test shadow size changes. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. <p>Move the Light (hands on) 5 mins.</p> <ul style="list-style-type: none"> Notice how a shadow changes when a light is moved. <p>Making Shadow Puppets (digital journal) 5-15 mins.</p> <ul style="list-style-type: none"> Create shadow puppets. <p>Shadow Hunt Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> Discuss <i>Shadow Hunt</i> photos. 	<p>Shoebox Shadow Theater (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move a light to make big, small, and clear shadows. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. <p>Shadow Cave (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Make big and small shadows to fill an outline on a cave wall. <p>Move the Light (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Notice how a shadow changes when a light is moved. <p>Shadow Puppets (video) 5 mins.</p> <ul style="list-style-type: none"> Watch <i>Shadow Puppets</i> and connect to shadow explorations.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. © 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

WK 2: SHADOWS	Lesson 4	Lesson 5	Lesson 6
Outdoors	Where Can My Shadow Be? (song) 5-10 mins. <ul style="list-style-type: none"> Sing a song and act out positions in front, behind, and beside. 		Simon Says Make a Shadow (hands-on) 20 mins. <ul style="list-style-type: none"> Play a Simon Says shadow game using positional word clues.
Circle Time: Wrap Up	Charting Shadows Big & Small (hands-on) 15 mins. <ul style="list-style-type: none"> Record a ball's shadow size as it moves closer to the light. I Have a Little Shadow (chant) 5 mins. <ul style="list-style-type: none"> Act out words of the classic poem. 	What Makes a Shadow? by Clyde Robert Bulla (read-aloud) 5-10 mins. <ul style="list-style-type: none"> Read <i>What Makes a Shadow</i>. I Have a Little Shadow (chant) 5 mins. <ul style="list-style-type: none"> Act out words of the classic poem. 	Shadow Puppets (video) 10-15 mins. <ul style="list-style-type: none"> Watch <i>Shadow Puppets</i> and connect to shadow explorations. Shadow Cave (digital app) 5-15 mins. <ul style="list-style-type: none"> Make big and small shadows to fill an outline on a cave wall.

Week 3: Changing Shadows

SHADOWS	Lesson 7	Lesson 8	Lesson 9
	Children explore combining shadows (overlapping and rotation).	Children explore shadows: combining and stacking objects.	Children explore rotation.
Circle Time: Introduction	What Makes a Shadow? by Clyde Robert Bulla (read aloud) 5-10 mins. <ul style="list-style-type: none"> Read <i>What Makes a Shadow</i>. Shadow Play, Levels 6–9 (digital app) 5-15 mins. <ul style="list-style-type: none"> Explore how shadows are made. 	Puppy Park, Levels 1–6 (digital app) 5-15 mins. <ul style="list-style-type: none"> Design, test, and revise a solution that will provide shade for dogs. What Makes a Shadow? by Clyde Robert Bulla (read-aloud) 5-10 mins. <ul style="list-style-type: none"> Read <i>What Makes a Shadow</i>. 	Shadows Changing Shape (hands-on) 5 mins. <ul style="list-style-type: none"> Observe how rotating an object changes its shadow's shape. Outdoor Shadows (video) 5 mins. <ul style="list-style-type: none"> Watch a video of children making outdoor shadow.
Small Group	Mystery Shadows Photos (digital journal) 10-15 mins. <ul style="list-style-type: none"> Stage and photograph mystery shadows. Shadow Math (hands-on) 5-15 mins. <ul style="list-style-type: none"> Play shadow math games to build objects and create shadows. 	Where's the Shadow? (hands-on) 15 mins. <ul style="list-style-type: none"> Create a structure that will block light from reaching a pretend pet. Shadow Play, Levels 11–13 (digital app) 5-15 mins. <ul style="list-style-type: none"> Explore how shadows are made. 	Rotation Station (digital journal) 10-15 mins. <ul style="list-style-type: none"> Explore rotation and changing shadow shapes. Shadow Play, Level 8 (digital app) 5-15 mins. <ul style="list-style-type: none"> Explore how shadows are made.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. ©/© 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

WK 3: SHADOWS	Lesson 7	Lesson 8	Lesson 9
<p>Learning Centers</p>	<p>Large Shadow Theater (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Cast shadows on a large sheet. <p>Making Shadow Puppets (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Create shadow puppets. <p>Mystery Shadows Game (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Play a digital shadow guessing game. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Explore how shadows are made. <p>Shadow Cave (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Make big and small shadows to fill an outline on a cave wall. <p>Shadow Math (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Play shadow math games to build objects and create shadows. 	<p>Shoebox Shadow Theater (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> • Move a light to make big, small, and clear shadows. <p>Shadow Sculptures (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Create sculptures from various materials and cast shadows. <p>Where's the Shadow? (hands-on) 15 mins.</p> <ul style="list-style-type: none"> • Create a structure that will block light from reaching a pretend pet. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Explore how shadows are made. <p>Puppy Park (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Design, test, and revise a solution that will provide shade for dogs. <p>Shadow Cave (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Make big and small shadows to fill an outline on a cave wall. 	<p>Large Shadow Theater (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Cast shadows on a large sheet. <p>Making Shadow Puppets (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Create shadow puppets. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Explore how shadows are made. <p>Puppy Park (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Design, test, and revise a solution that will provide shade for dogs. <p>Shadow Sculptures (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> • Create sculptures from various materials and cast shadows.
<p>Outdoors</p>		<p>Tracing & Measuring Shadows (hands-on) 15 mins.</p> <ul style="list-style-type: none"> • Trace and measure shadows at different times of the day. 	<p>Where Can My Shadow Be? (song) 5-10 mins.</p> <ul style="list-style-type: none"> • Sing a song and act out positions in front, behind, and beside.
<p>Circle Time: Wrap Up</p>	<p>Shadow Play, Levels 6–9 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Explore how shadows are made. 	<p>Puppy Park, Levels 7–12 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> • Design, test, and revise a solution that will provide shade for dogs. 	<p>Tracing & Measuring Shadows Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> • Revisit outdoor shadow explorations.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. © 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Week 4: Making and Changing Shadows

SHADOWS	Lesson 10 Children explore how shadows move when the position of the light changes.	Lesson 11 Children explore and compare how shadows change.	Lesson 12 Children revisit how shadows are made and how they change.
Circle Time: Introduction	<p>Shadows On the Move (hands-on) 5 mins.</p> <ul style="list-style-type: none"> Predict where a shadow will fall when a light source is moved. <p>Shifting Shadows (video) 5 mins.</p> <ul style="list-style-type: none"> Watch <i>Shifting Shadows</i>. Observe shadows throughout the day. 	<p>Shifting Shadows (video) 5 mins.</p> <ul style="list-style-type: none"> Watch <i>Shifting Shadows</i>. Observe shadows throughout the day. <p>Moonbear's Shadow by Frank Asch (read-aloud) 10 mins.</p> <ul style="list-style-type: none"> Read <i>Moonbear's Shadow</i>. Act out scenes. 	<p>Moonbear's Shadow by Frank Asch (read-aloud) 10 mins.</p> <ul style="list-style-type: none"> Read <i>Moonbear's Shadow</i>. Act out scenes. <p>Shadow Review (digital journal) 5 mins.</p> <ul style="list-style-type: none"> Revisit and review shadow activities.
Small Group	<p>Where Will the Shadow Appear? (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Predict and test where a shadow will appear when a light is moved. <p>Build a Shadow Game (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Use 2D shapes to make a shadow to match a shadow card image. 	<p>Shadow Play, Levels 12–14 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. <p>Moonbear's Shadow Puppet Game (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Use a stuffed animal as a puppet to act out the story. 	<p>More Shadow Moves (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Move a flashlight and observe how the shadow changes.
Learning Centers	<p>Shoobox Shadow Theater (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move a light to make big, small, and clear shadows. <p>Shadow Play (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. <p>Puppy Park (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Design, test, and revise a solution that will provide shade for dogs. <p>Shadow Hunt Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> Discuss <i>Shadow Hunt</i> photos. 	<p>Shoobox Shadow Theater (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move a light to make big, small, and clear shadows. <p>Moonbear's Shadow Puppet Game (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Use a stuffed animal as a puppet to act out the story. <p>Cool Shadows Review (digital journal) 5-10 mins.</p> <ul style="list-style-type: none"> Review photos of interesting shadows. <p>Shifting Shadows (video) 5 mins.</p> <ul style="list-style-type: none"> Watch <i>Shifting Shadows</i>. Observe shadows throughout the day. 	<p>Puppy Park (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Design, test, and revise a solution that will provide shade for dogs. <p>Shadow Sculptures (hands-on) 5-15 mins.</p> <ul style="list-style-type: none"> Create sculptures from various materials and cast shadows. <p>Moonbear's Shadow Puppet Game (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Use a stuffed animal as a puppet to act out the story. <p>Shadow Cave, Levels 1-12 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Make big and small shadows to fill an outline on a cave wall.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. ©/© 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

WK 4: SHADOWS	Lesson 10	Lesson 11	Lesson 12
	<p>Build a Shadow Game (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Use 2D shapes to make a shadow to match a shadow card image. 	<p>Build a Shadow Game (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Use 2D shapes to make a shadow to match a shadow card image. <p>Shadow Cave, Levels 1-12 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Make big and small shadows to fill an outline on a cave wall. 	<p>Shoobox Shadow Theater (hands-on) 5-10 mins.</p> <ul style="list-style-type: none"> Move a light to make big, small, and clear shadows.
Outdoors		<p>Tracing & Measuring Shadows (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Trace and measure shadows at different times of the day. 	<p>Tracing & Measuring Shadows (hands-on) 15 mins.</p> <ul style="list-style-type: none"> Trace and measure shadows at different times of the day.
Circle Time: Wrap Up	<p>Shifting Shadows (video) 5 mins.</p> <ul style="list-style-type: none"> Watch Shifting Shadows. Observe shadows throughout the day. <p>What Makes a Shadow? by Clyde Robert Bulla (read-aloud) 5-10 mins.</p> <ul style="list-style-type: none"> Read <i>What Makes a Shadow</i>. 	<p>Shadow Review (digital journal) 5 mins.</p> <ul style="list-style-type: none"> Revisit and review hands on and digital shadow activities. <p>Shadow Play, Levels 12-14 (digital app) 5-15 mins.</p> <ul style="list-style-type: none"> Explore how shadows are made. 	<p>Shadow Celebration (song) 5-10 mins.</p> <ul style="list-style-type: none"> Hold a shadow dance. Revisit and sing shadow songs. <p>Little Shadow, Dance With Me (song) 5 mins.</p> <ul style="list-style-type: none"> Sing and move to a shadow song.



The art, characters, and related indicia on this material are trademarks of First 8 Studios @WGBH. ©/© 2021 WGBH Educational Foundation. All Rights Reserved. This material is based upon work supported by the National Science Foundation under Grant No. DRL-1813280. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.