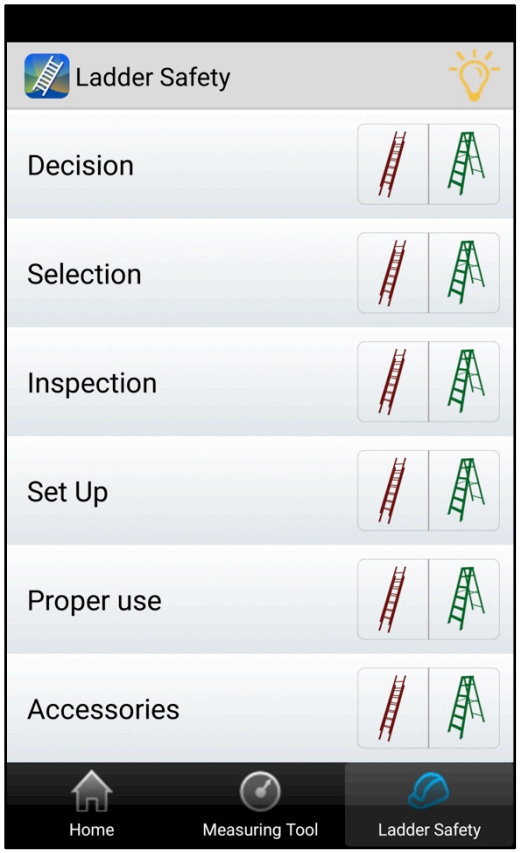
Ladder Safety App User's Manual (Android OS)



National Institute for Occupational Safety and Health

National Institute for Occupational Safety and Health (NIOSH)

DSFederal
CONNECTING THE DOTS

Produced by DSFederal Inc.

Table of Contents

I. Android App Installation 3

II. Home Screen: Ladder Application 4

A. Measuring Tool 5

B. Ladder Safety 8

a) 1: Decision 9

b) 2: Selection 11

c) 3: Inspection 19

d) 4: Setup 23

e) 5: Proper Use 31

f) 6: Accessories 36

III. Accessibility Features 41

IV. End-User License Agreement 69

Android App Installation

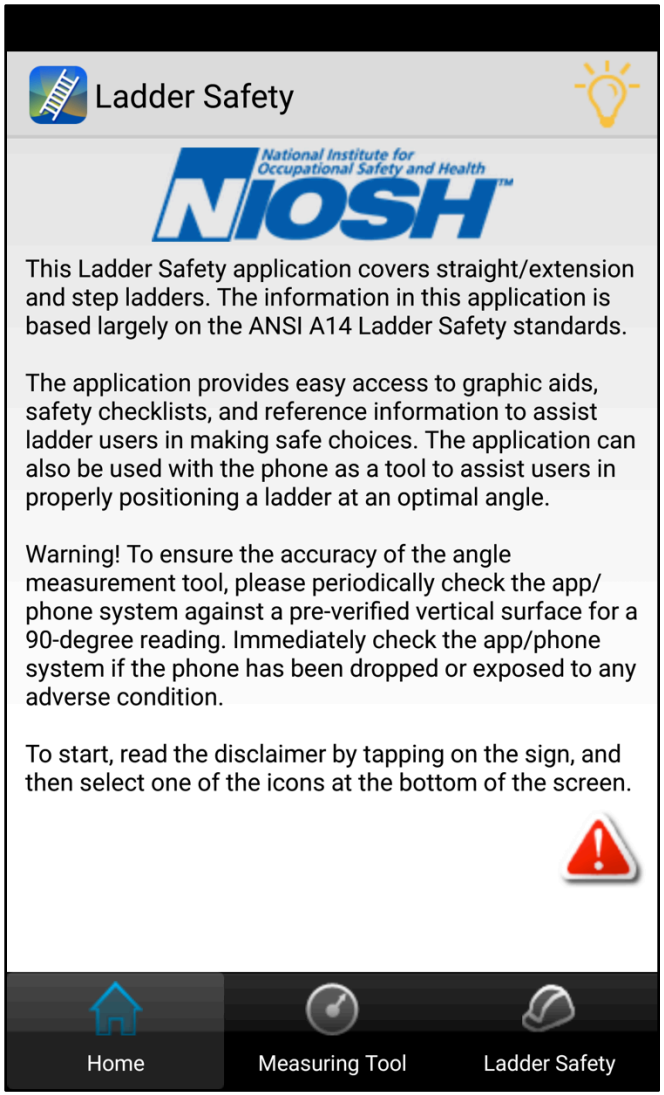
Instructions for loading the NIOSH Ladder Safety Android App:*

- Go to the Google Play Store, <http://play.google.com>, on your Android phone
- Tap the Search icon (magnifying glass)
- Type 'Ladder Safety' in the search field
- Select the App by tapping the Ladder Safety App icon
- Select INSTALL to download App to tablet or phone
- Once completely downloaded and installed, the App is ready to use
- Launch the Ladder Safety Android App

**Android version 2.2 or higher is required for using the Ladder Safety Android App.*

National Institute for Occupational Safety and Health NIOSH

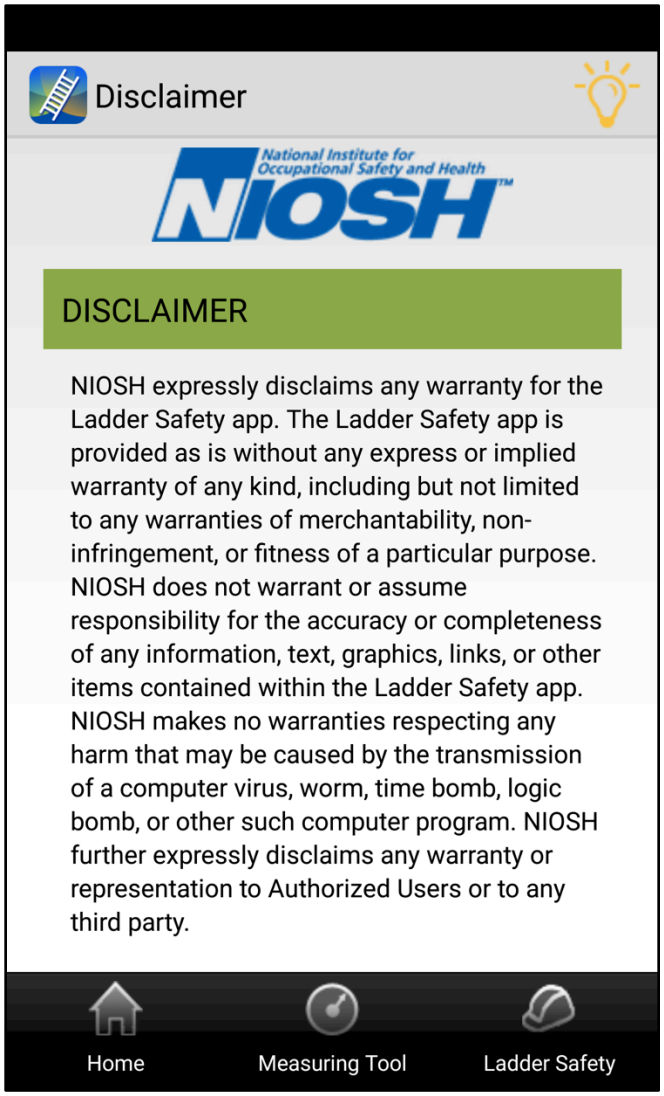
Home Screen: Ladder Application



The light blub toggles between high-contrast mode and normal mode.

Refer to the Accessibility Features section for more information.

This button shows the disclaimer.



National Institute for Occupational Safety and Health
NIOSH

Measuring Tool

The help page will show after tapping this icon.

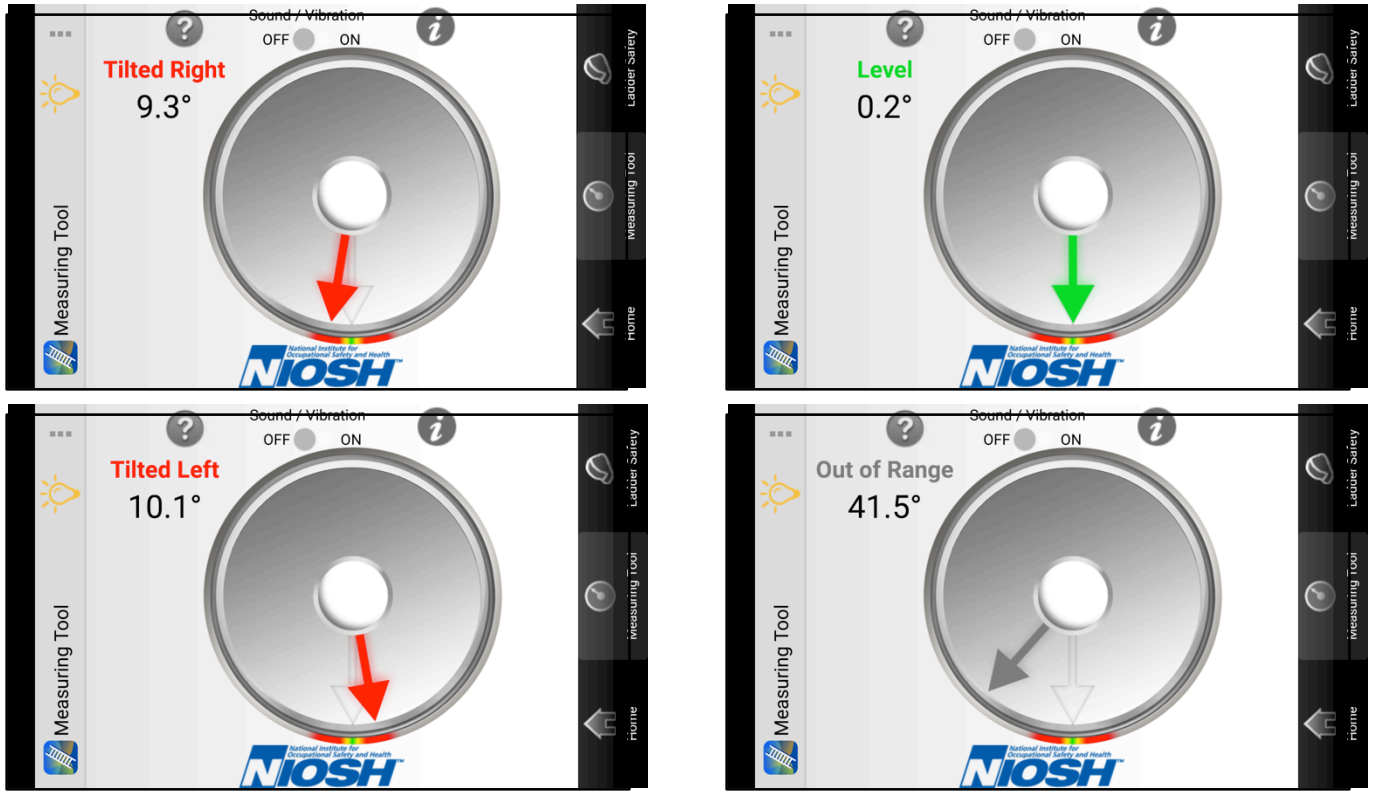
The home page will show after tapping this icon.

There will be a visual indication on the screen (red arrow) outside the range of ±1 degrees from 75 degrees, indicating the ladder is not yet at the proper angle.

If the user has enabled vibration and sound, there will be an audible, constant tone, a vibration, and a visual indication (green arrow) on the screen in the range of ±1 degrees from 75 degrees indicating a "great" type of notice.

National Institute for Occupational Safety and Health NIOSH

Measuring Tool: Verticality



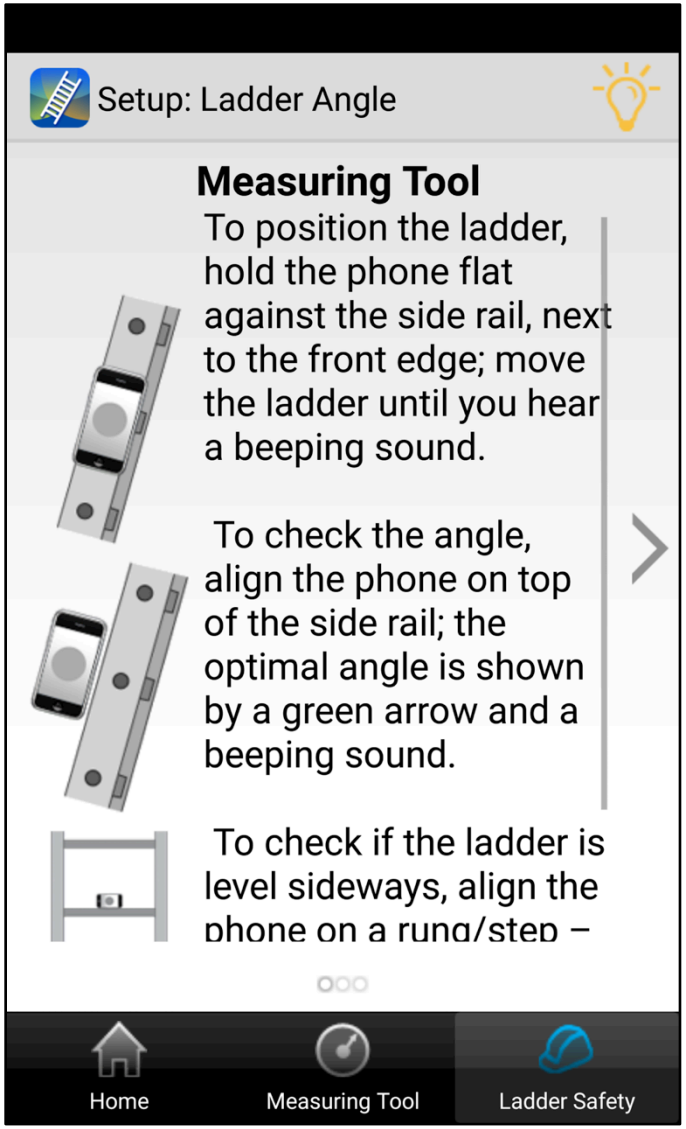
If the user tilts the device 90 degrees (landscape mode), verticality mode is enabled.

There will be a visual indication on the screen (red arrow) outside the range of ±1.5 degrees from 0 degrees, indicating the ladder is not yet at the proper angle.

If the user has enabled vibration and sound, there will be an audible, constant tone, a vibration, and a visual indication (green arrow) on the screen in the range of ±1.5 degrees from 0 degrees indicating a "level" type of notice.

National Institute for Occupational Safety and Health NIOSH

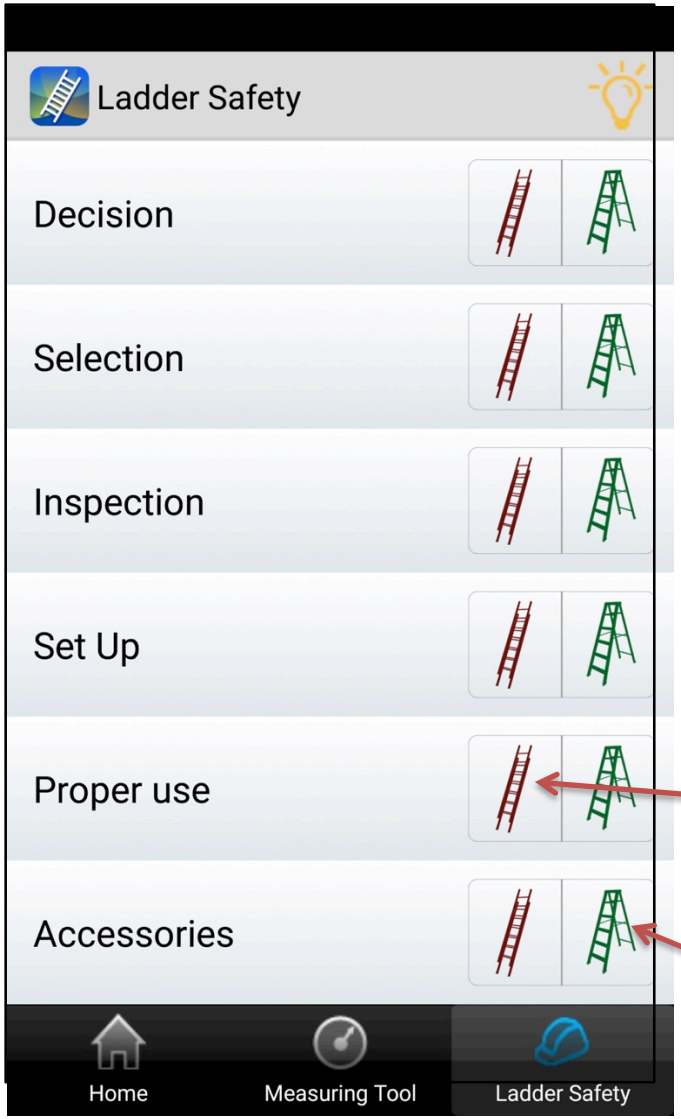
Measuring Tool



Help

The Measuring Tool **Help** button opens the Setup Ladder Angle – Measuring Tool page.

Ladder Safety



When the user taps the **Ladder Safety** button, a window will appear with options to go to the following screens:

- 1: Decision
- 2: Selection
- 3: Inspection
- 4: Set Up
- 5: Proper Use
- 6: Accessories

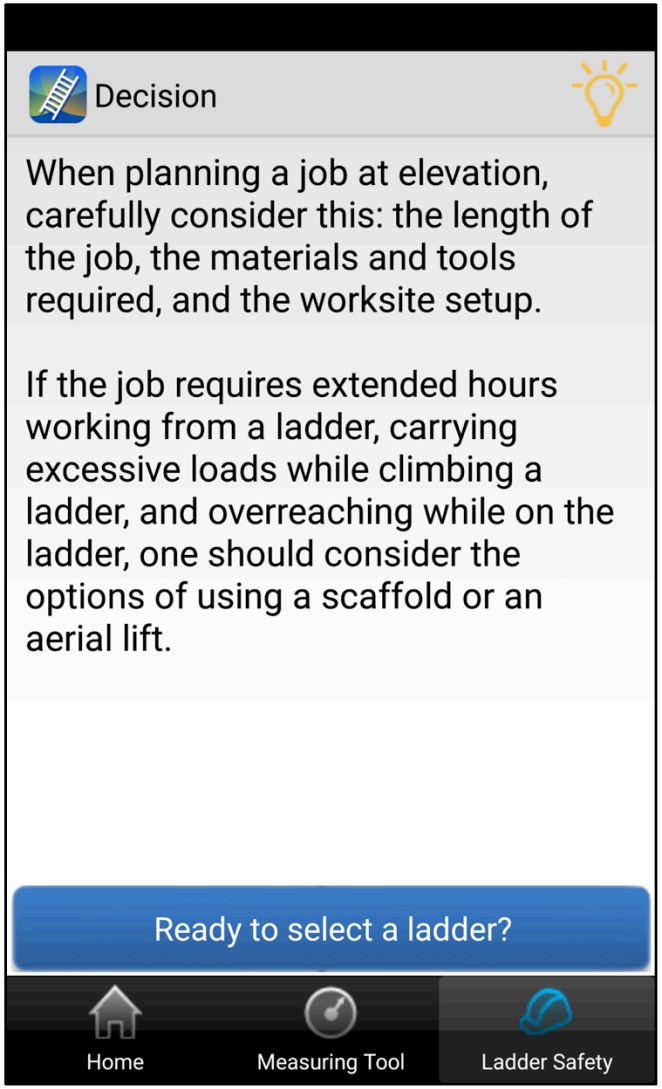
With the new unified menu, the user can select either the extension ladder or step ladder screens by touching the respective button.

Touch the extension ladder icon to go to the extension ladder version of the screen.
Ex) Touching the extension ladder on the Proper use row will lead to the Proper use for extension ladders.

Touch the step ladder icon to go to the step ladder version of the screen.
Ex) Touching the step ladder on the Accessories row will lead to the Accessories for step ladders

National Institute for Occupational Safety and Health NIOSH

1: Extension Ladder-Decision



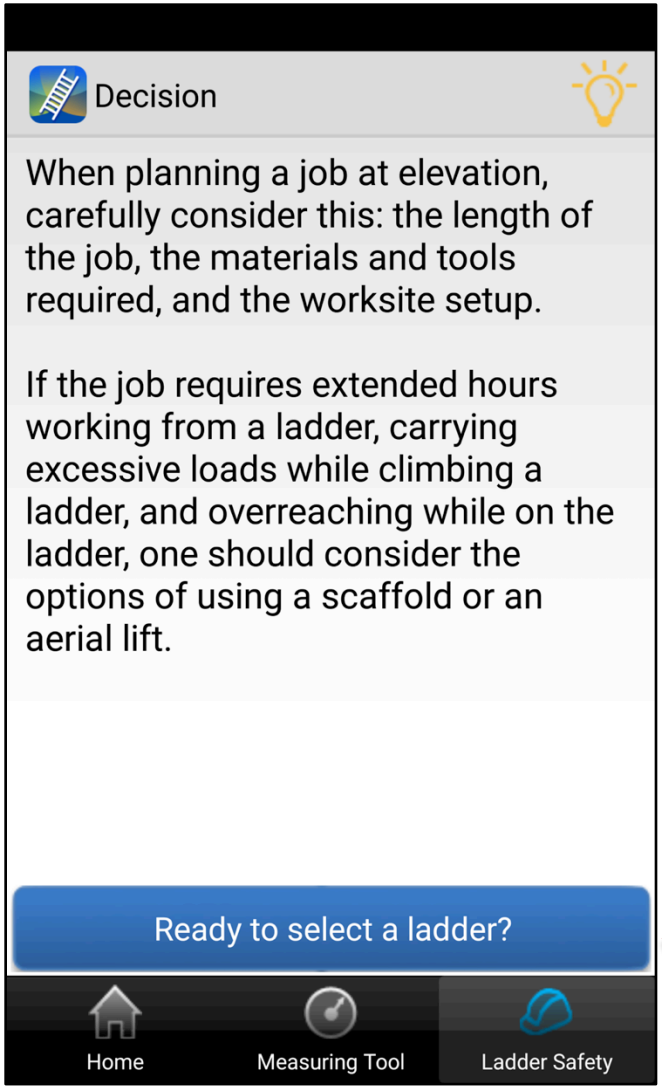
Decision:

A series of suggestions will be presented:

- When planning a job at elevation, carefully consider:
  - The length of the job
  - The materials and tools required
  - The worksite setup
- Consider using a scaffold or an aerial lift if the job requires:
  - Extended hours working from a ladder
  - Carrying excessive loads while climbing a ladder
  - Overreaching while on the ladder

The Selection screen appears after tapping this button.

1: Step Ladder-Decision



Decision:

***This screen is identical to the Decision screen for the extension ladder, as the decisions are relevant to both extension and step ladders.**

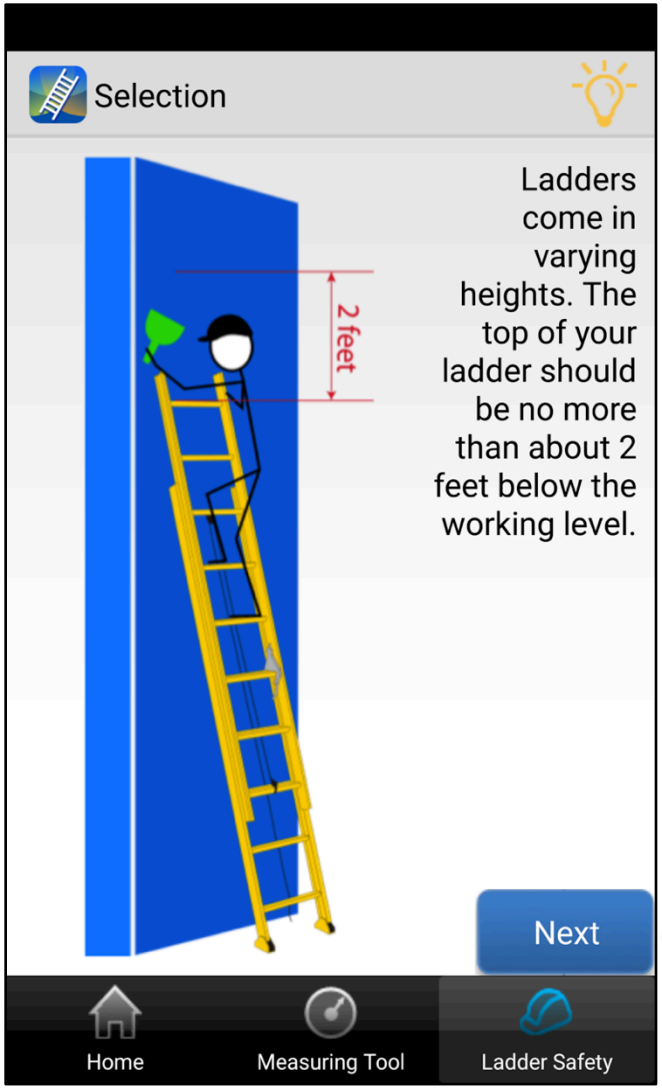
A series of suggestions will be presented:

- When planning a job at elevation, carefully consider:
  - The length of the job
  - The materials and tools required
  - The worksite setup
- Consider using a scaffold or an aerial lift if the job requires:
  - Extended hours working from a ladder
  - Carrying excessive loads while climbing a ladder
  - Overreaching while on the ladder

The Selection screen appears after tapping this button.

National Institute for Occupational Safety and Health NIOSH

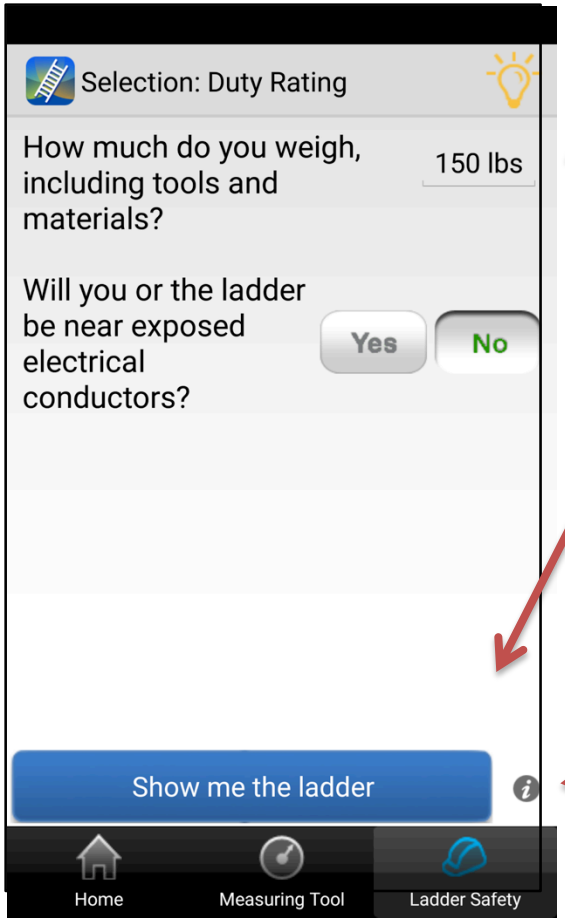
2: Extension Ladder-Selection Home Screen



- This home screen helps the user learn that the top of the extension ladder should be no more than 2 feet below the working level.

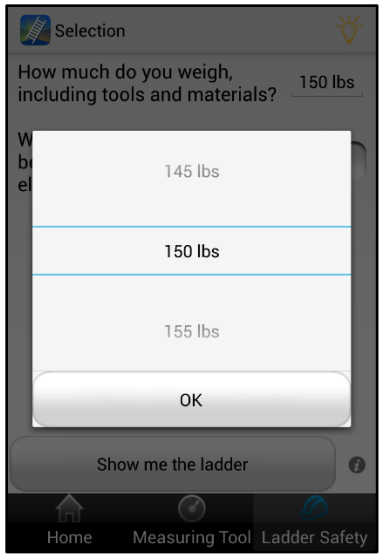
Pressing the Next button will lead to duty rating screen.

2: Extension Ladder-Selection Duty Rating



Questions

This button will open up a rolling graphics (like a slot machine) allowing the user to scroll through and select values for the weigh question.



Response

Depending on the data entered, a ladder will be recommended when the user taps the **Show me the ladder** button.

- Light Duty Type III ≤ 200 lbs
- Medium Duty Type II ≤ 225 lbs
- Heavy Duty Industrial Type I ≤ 250 lbs
- Extra Heavy Duty Industrial Type IA ≤ 300 lbs
- Special Duty Rugged Professional Type IAA ≤ 375 lbs

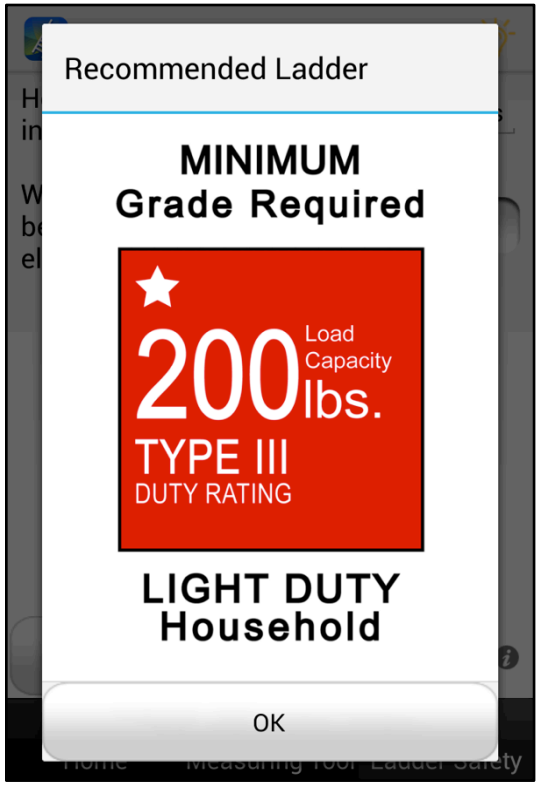
Info

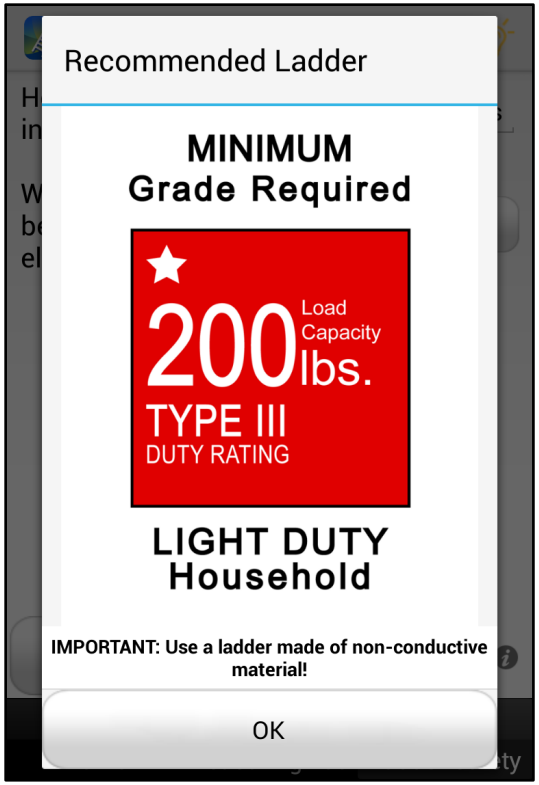
This button will open up a rolling window that shows the sample rating stickers.

National Institute for Occupational Safety and Health NIOSH

2: Extension Ladder-Selection

Show Me The Ladder





After tapping the **Show me the ladder** button, a written description of the ladder appears.

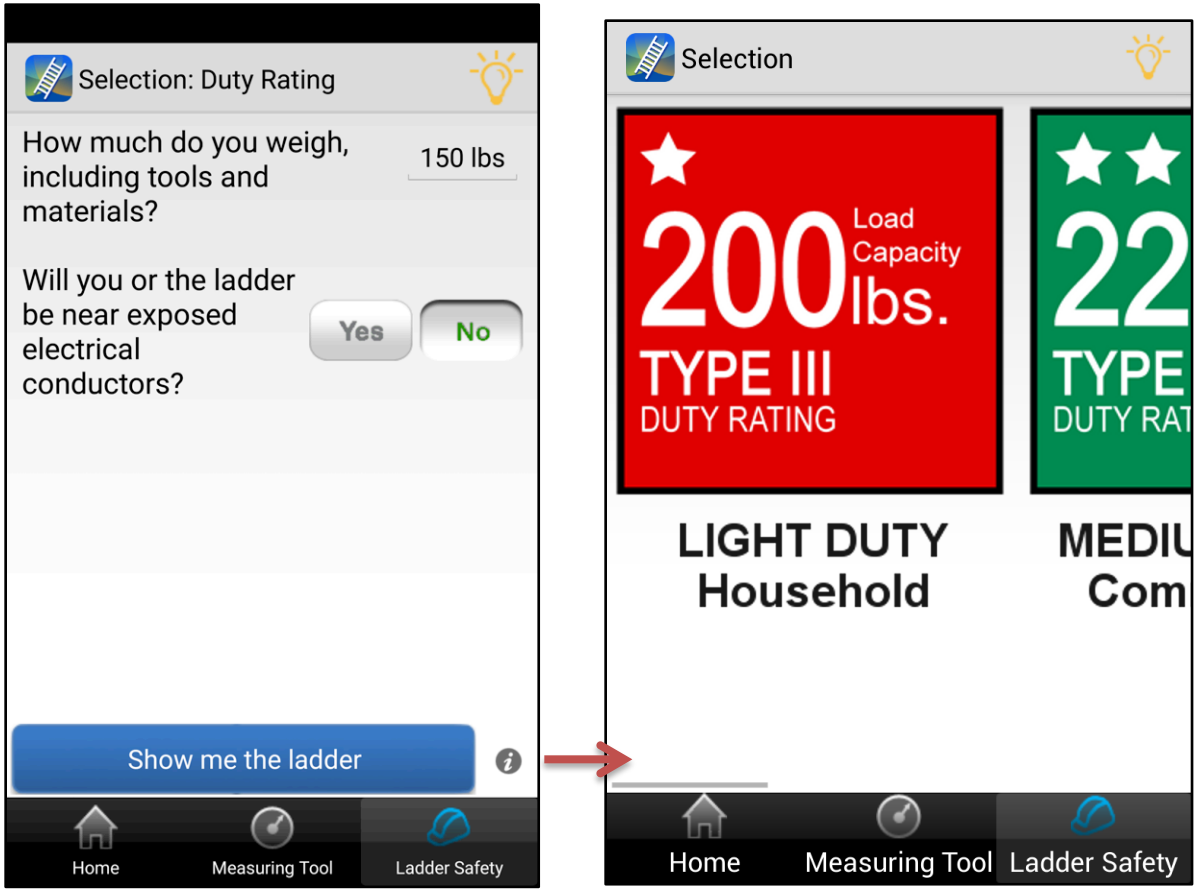
If an electrical hazard is present, the user will be advised to use a ladder made of non-conductive material.

The user may select new values and recalculate by tapping “Show me the ladder" again.

National Institute for Occupational Safety and Health
NIOSH

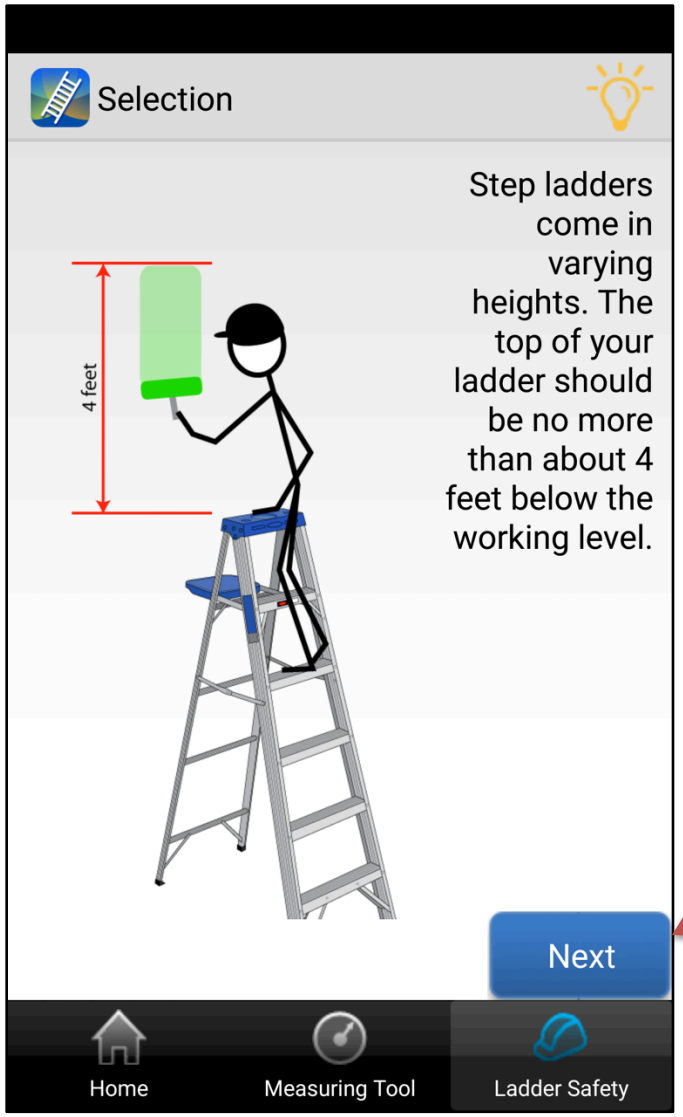
2: Extension Ladder-Selection

Sample Rating Stickers



The **Info** button opens a rolling window that shows sample rating stickers.

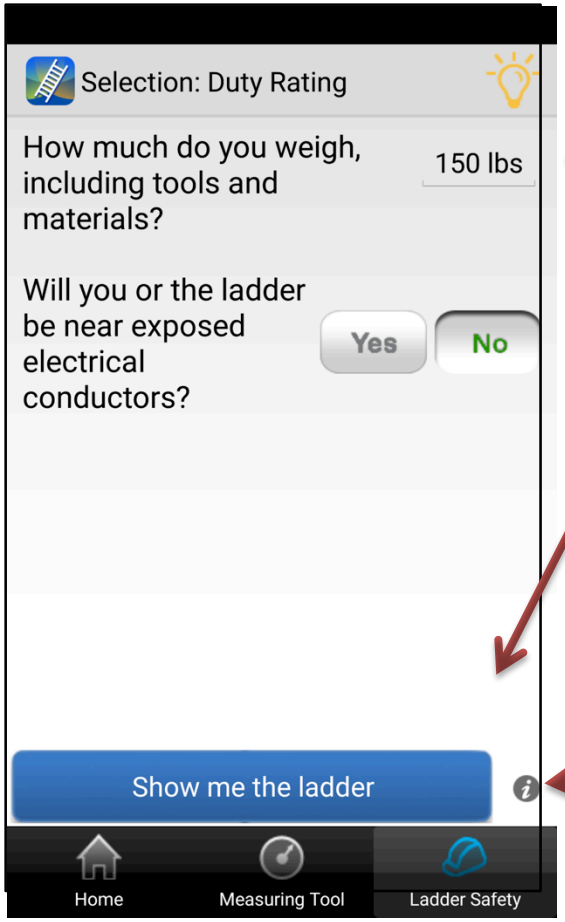
2: Step Ladder-Selection Home Screen



- This home screen helps the user learn that the top of the step ladder should be no more than 4 feet below the working level.

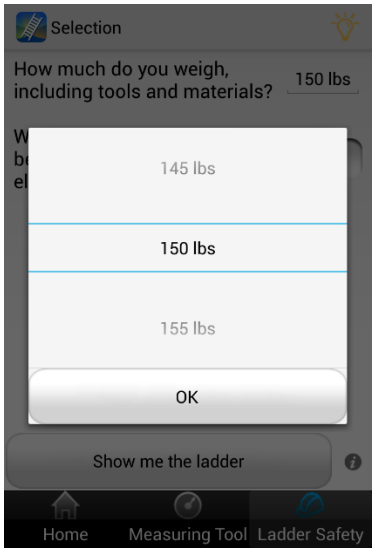
Pressing the Next button will lead to duty rating screen.

2: Step Ladder-Selection Duty Rating



Questions

This button will open up a rolling graphics (like a slot machine) allowing the user to scroll through and select values for the weigh question.



Response

Depending on the data entered, a ladder will be recommended when the user taps the **Show me the ladder** button.

- Light Duty Type III ≤ 200 lbs
- Medium Duty Type II ≤ 225 lbs
- Heavy Duty Industrial Type I ≤ 250 lbs
- Extra Heavy Duty Industrial Type IA ≤ 300 lbs
- Special Duty Rugged Professional Type IAA ≤ 375 lbs

Info

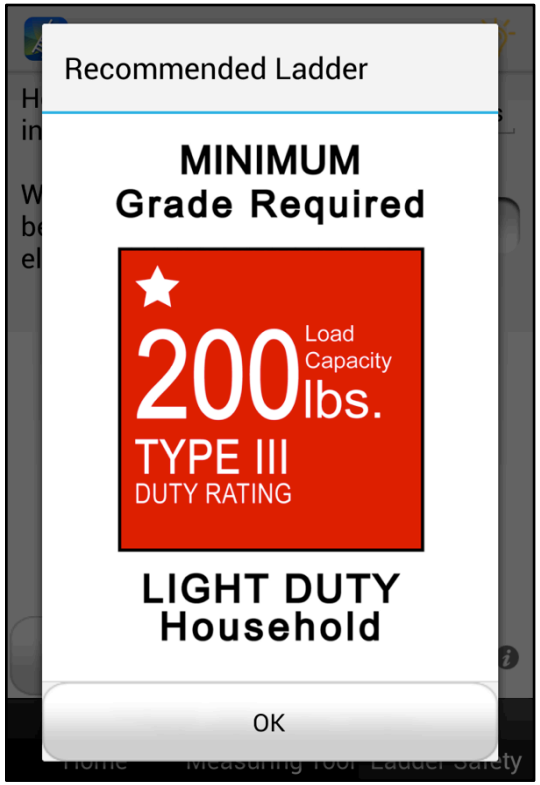
This button will open up a rolling window that shows the sample rating stickers.

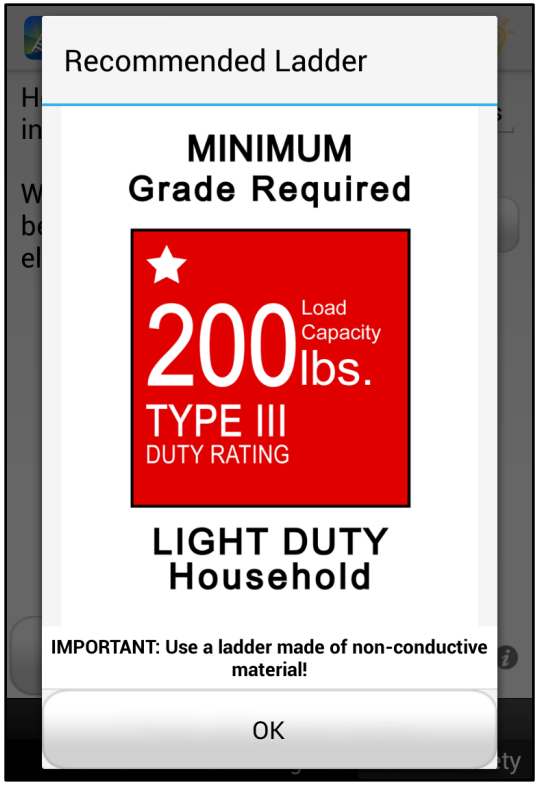
*This screen is identical to the Selection Duty Rating for extension ladders, as extension ladders and step ladders share the same duty ratings.

National Institute for Occupational Safety and Health NIOSH

2: Step Ladder-Selection

Show Me The Ladder





After tapping the **Show me the ladder** button, a written description of the ladder appears.

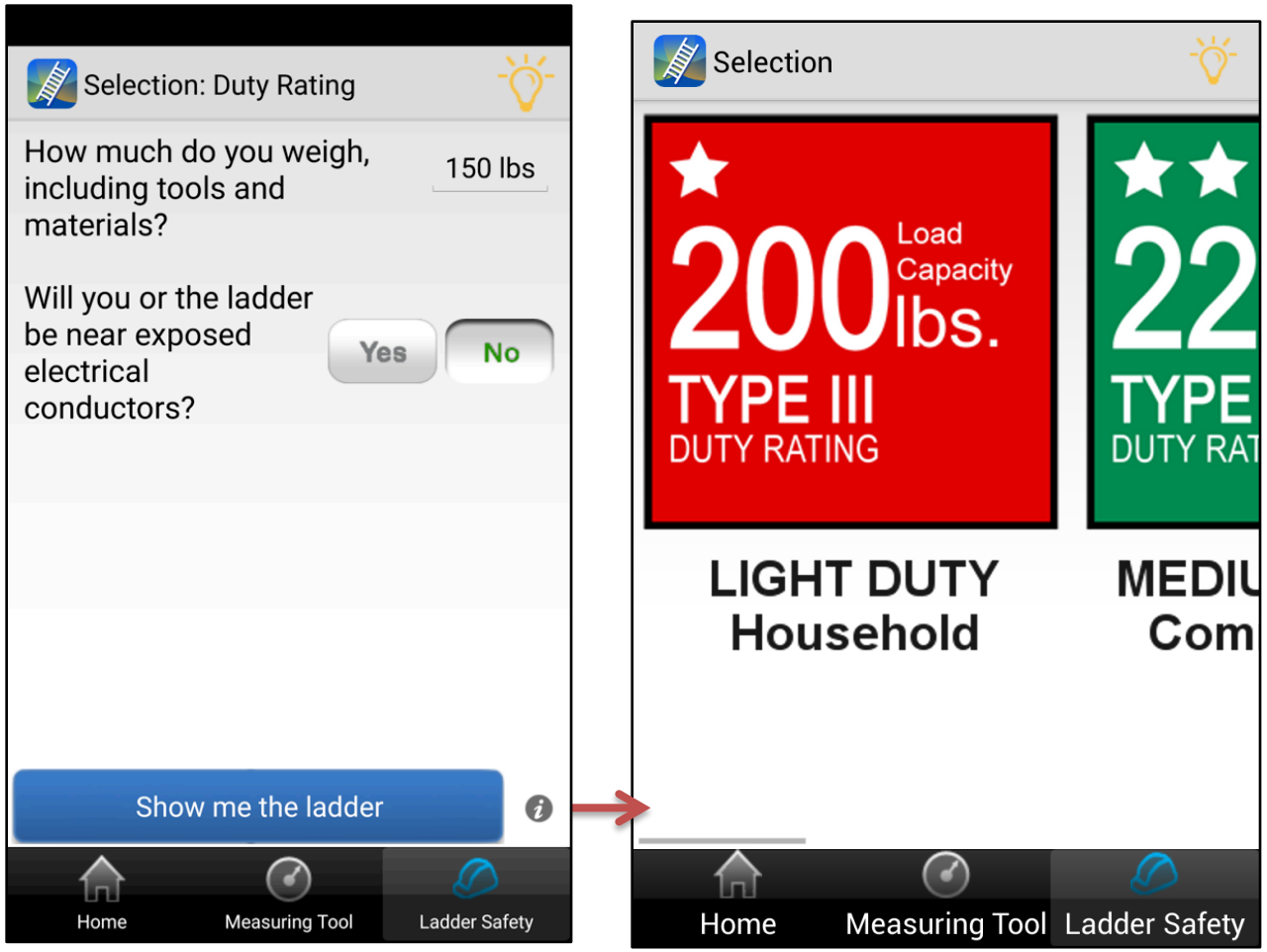
If an electrical hazard is present, the user will be advised to use a ladder made of non-conductive material.

The user may select new values and recalculate by tapping “Show me the ladder" again.

National Institute for Occupational Safety and Health NIOSH

2: Step Ladder-Selection

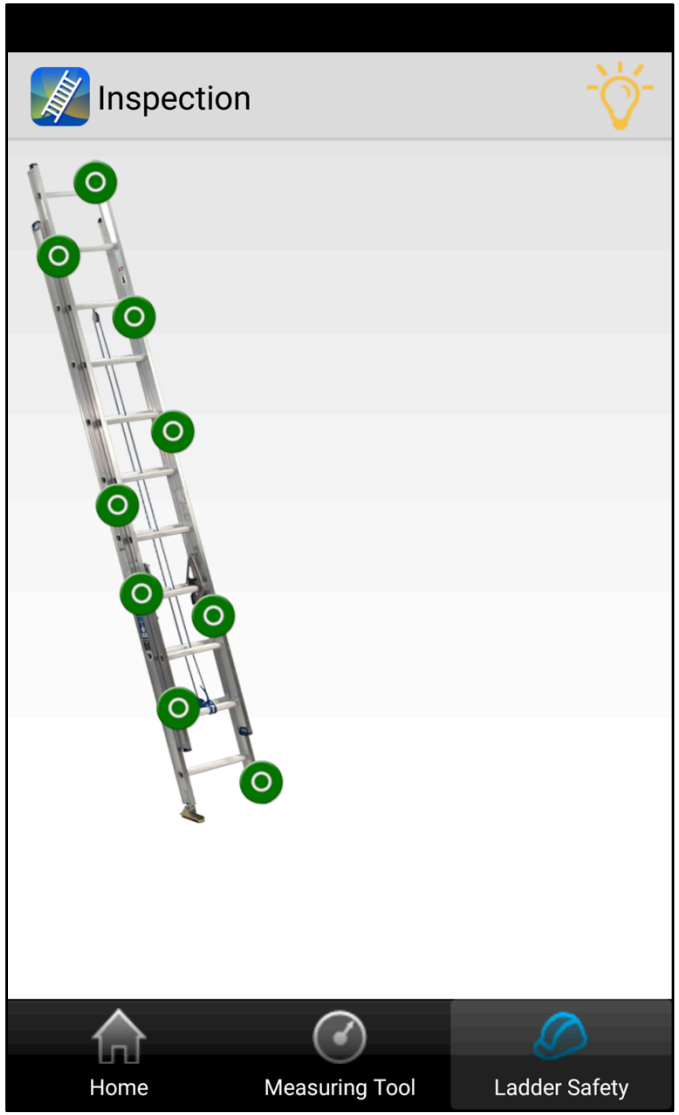
Sample Rating Stickers



The **Info** button opens a rolling window that shows sample rating stickers.

National Institute for Occupational Safety and Health NIOSH

3: Extension Ladder-Inspection



Buttons

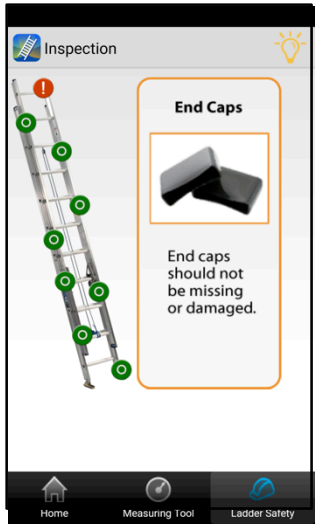
As the user presses each button, an enlarged image and a brief description of the types of damage to look for appears.

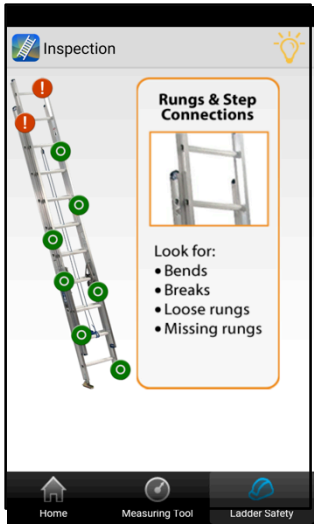
- End caps: missing or damaged
- Rungs and step connections: bends, breaks, loose rungs, or missing rungs
- Rope and Pulley: frayed or tangled
- Labels: missing or not readable
- Hardware: loose
- Rung Locks: broken and operates smoothly
- Surfaces: oily, greasy, rusty, or corroded
- Rails: cracks, bends, splits, or corroded
- Feet: missing, worn, or damaged shoes, missing slip-resistant pads, and operates smoothly

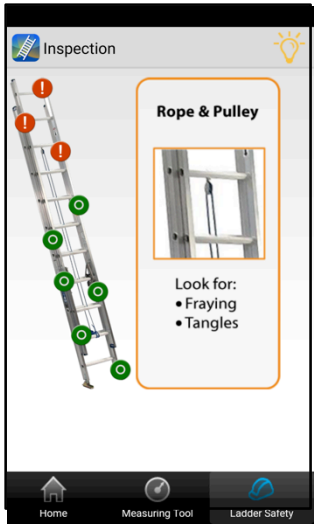
After each button is viewed, the color of the button will change.

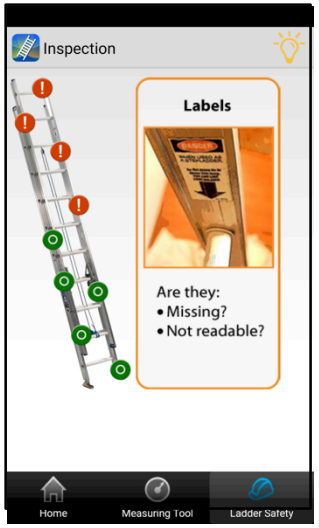
National Institute for Occupational Safety and Health NIOSH

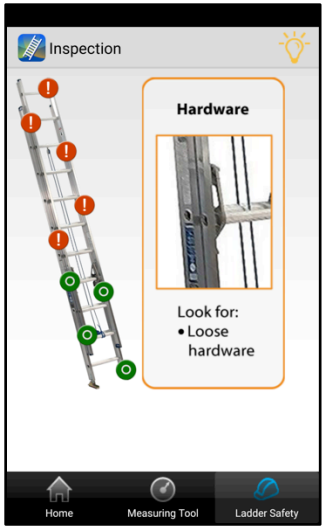
3: Extension Ladder-Inspection (cont'd)

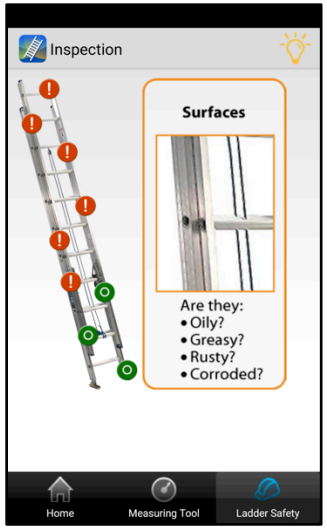


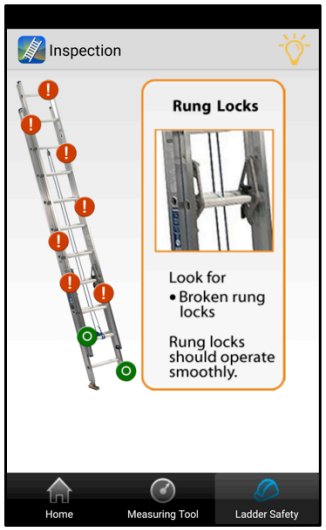


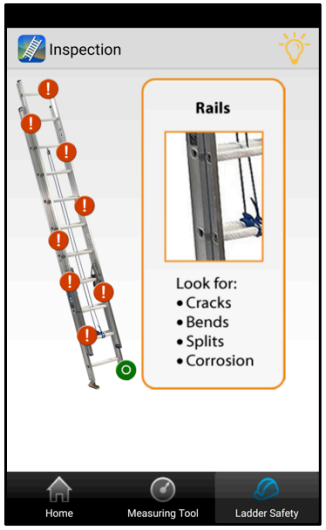


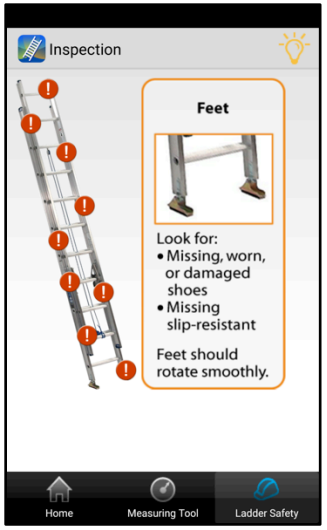












National Institute for Occupational Safety and Health
NIOSH

3: Step Ladder-Inspection

Buttons

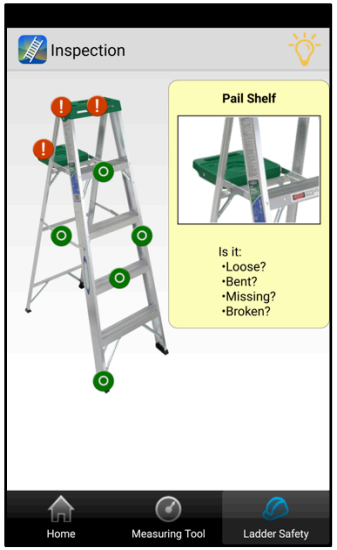
As the user presses each button, an enlarged image and a brief description of the types of damage to look for appears.

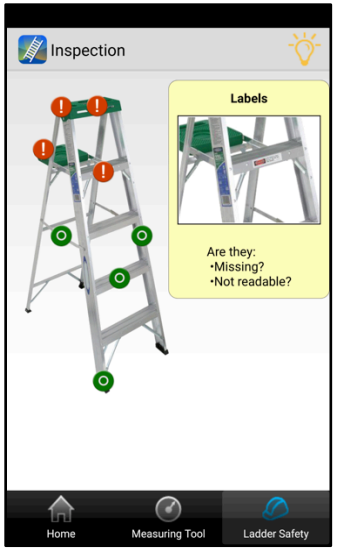
- Surfaces: Are they oily, greasy, slippery, or corroded?
- Moveable Parts: Do they operate freely?
- Steps: Are they cracked, bent, loose, or missing?
- Rails: Are they broken, cracked, bent? Are rail shields split or damaged?
- Spreaders: Are they loose or bent? Also look for broken stops, loose hinges, sharp edges
- Labels: Are they missing? Not readable?
- Pail Shelf: Is it loose, bent, missing, or broken?
- Shoes: Are they damaged or worn?

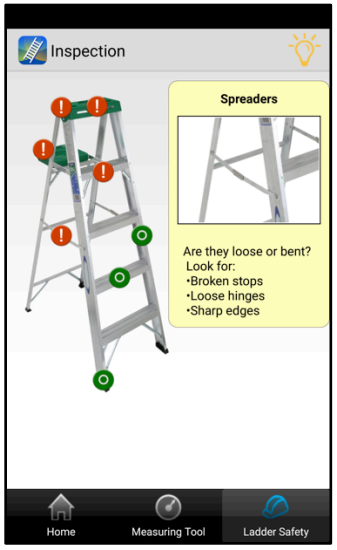
After each button is viewed, the color of the button will change.

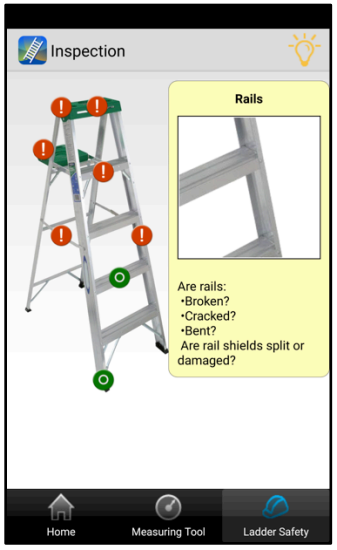
National Institute for Occupational Safety and Health NIOSH

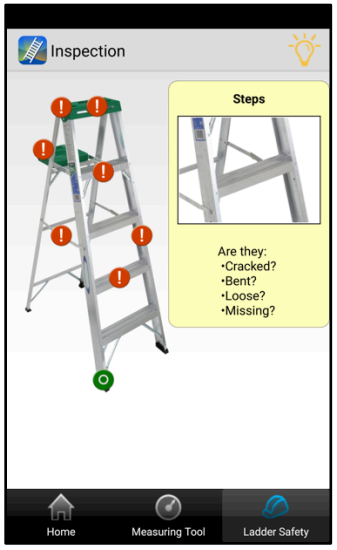
3: Step Ladder-Inspection (cont'd)





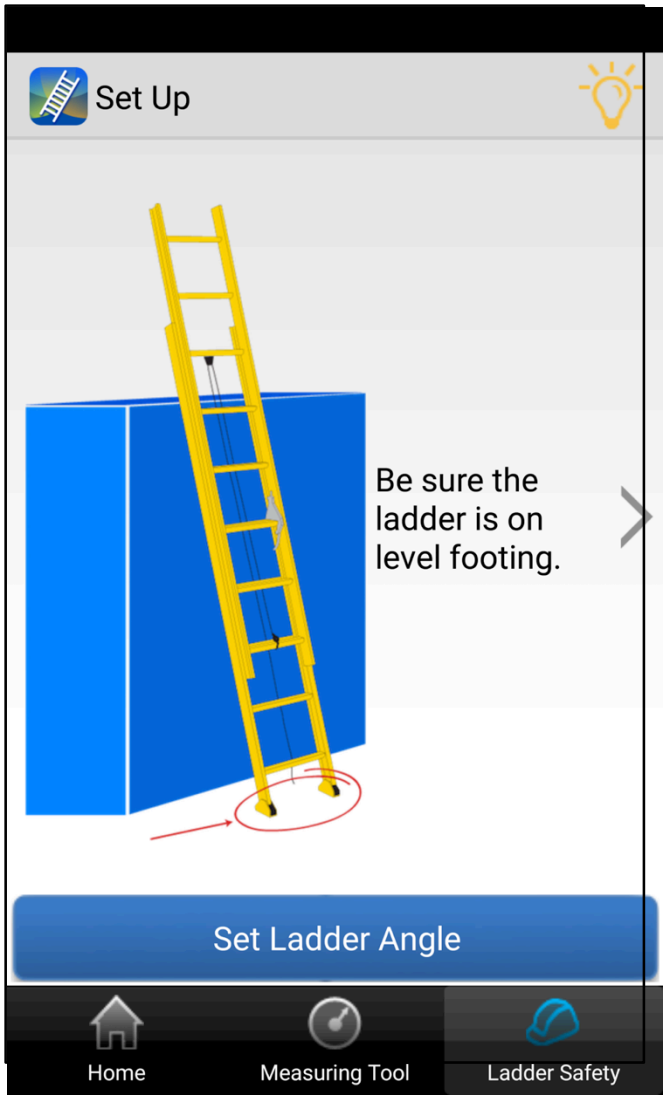






National Institute for Occupational Safety and Health
NIOSH

4: Extension Ladder-Set Up



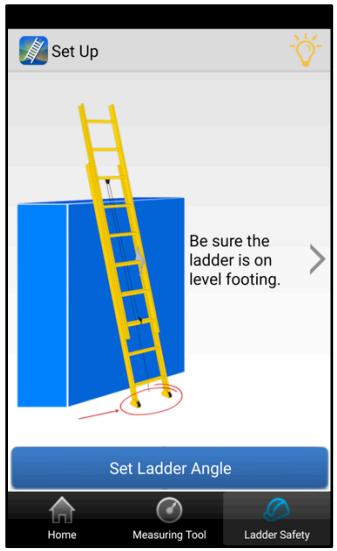
To view all of the images, swipe the page.

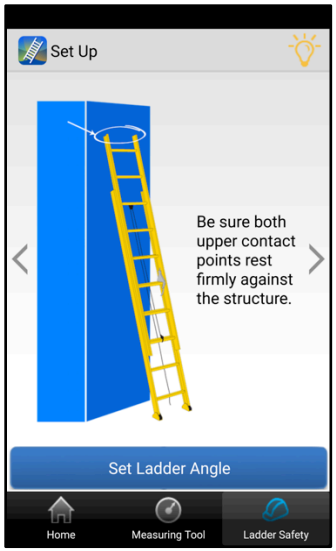
- Be sure the ladder is on level footing
- Be sure both upper contact points rest firmly against the structure
- Be sure the ladder extends 3 feet above the structure if climbing to an upper level
- Visually check that both rung locking mechanism are fully engaged
- On slippery or non-level surfaces the ladder base should be restrained

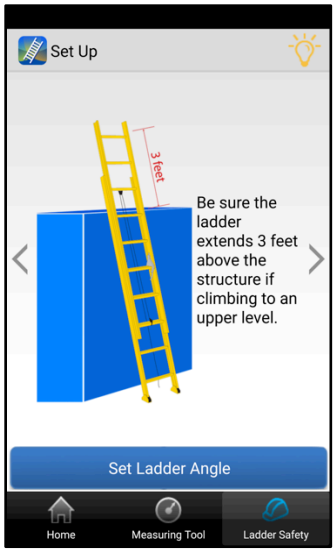
To find out how to setup the ladder properly, tap the **Set Ladder Angle** button.

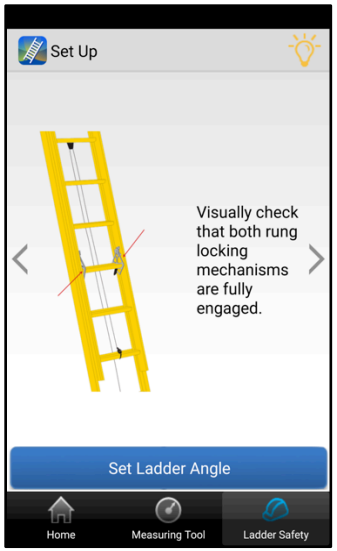
National Institute for Occupational Safety and Health NIOSH

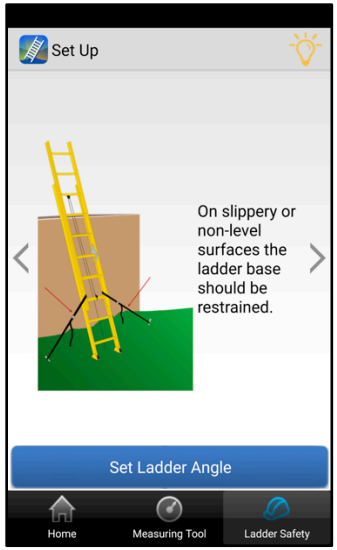
4: Extension Ladder-Set Up (cont'd)

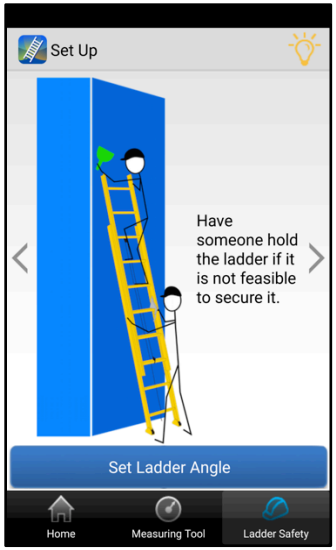


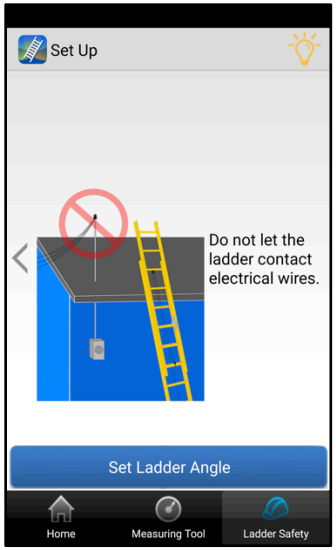






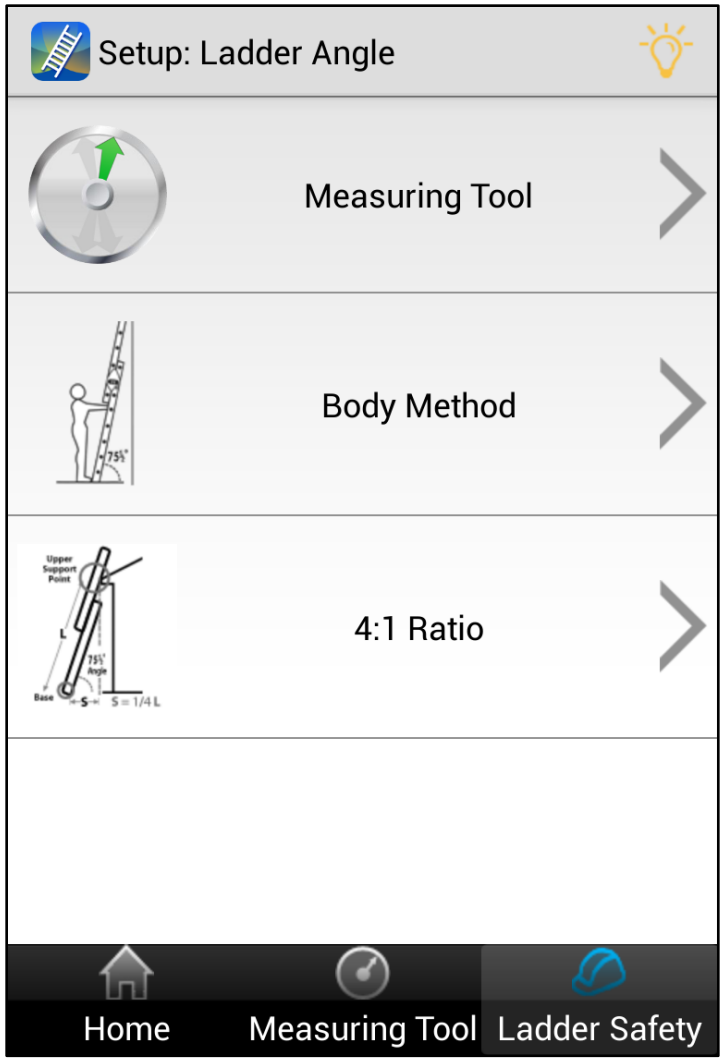






National Institute for Occupational Safety and Health
NIOSH

4: Extension Ladder-Set Up (cont'd)

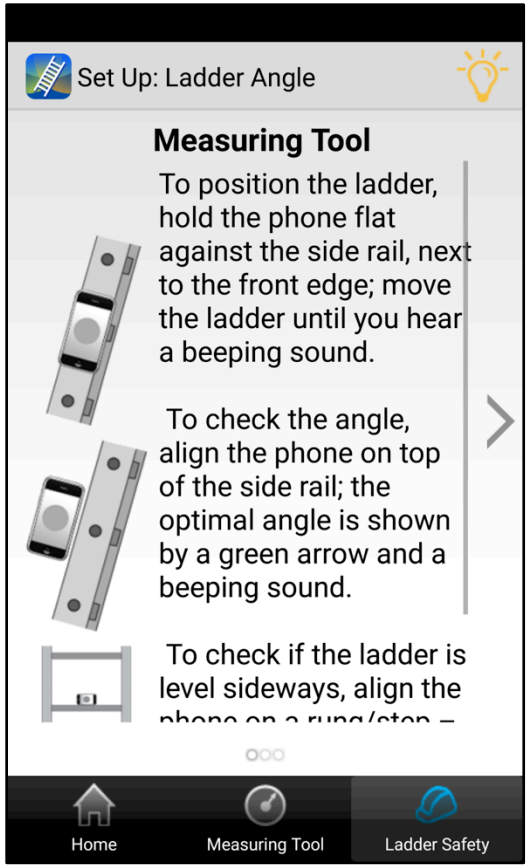


This screen provides three methods for proper ladder setup. To find out more, tap the following buttons:

- Measuring Tool
- Body Method
- 4:1 ratio

National Institute for Occupational Safety and Health NIOSH

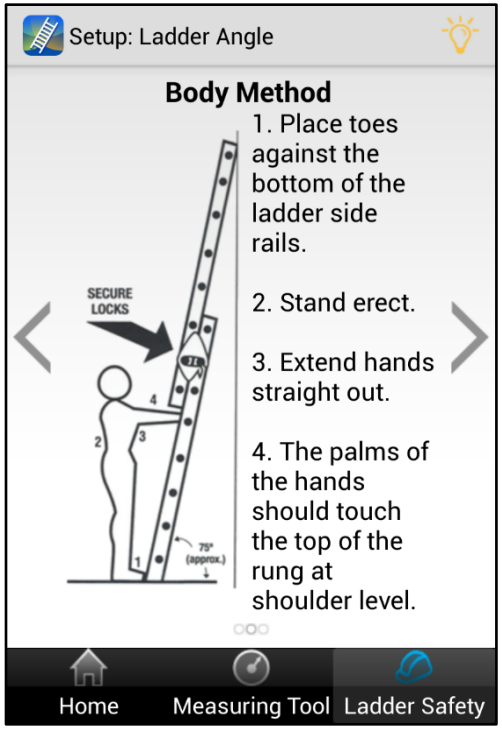
4: Extension Ladder-Set Up (cont'd)



Measuring Tool

After touching the Measuring Tool icon, a large image appears with the instructions displayed on the right.

Instructions: *To position the ladder: hold the phone flat against the side rail, next to the front edge; move the ladder until you hear a beeping sound. To check the angle: align the phone on top of the side rail; the optimal angle is shown by a green arrow and a beeping sound. To check if the ladder is level sideways, align the phone on a rung/step – level is indicated by a green arrow.*



Body Method

After touching the Body Method icon, a large image appears with the instructions displayed on the right.

Instructions:

1. Place toes against the bottom of the ladder side rails.

2. Stand erect.

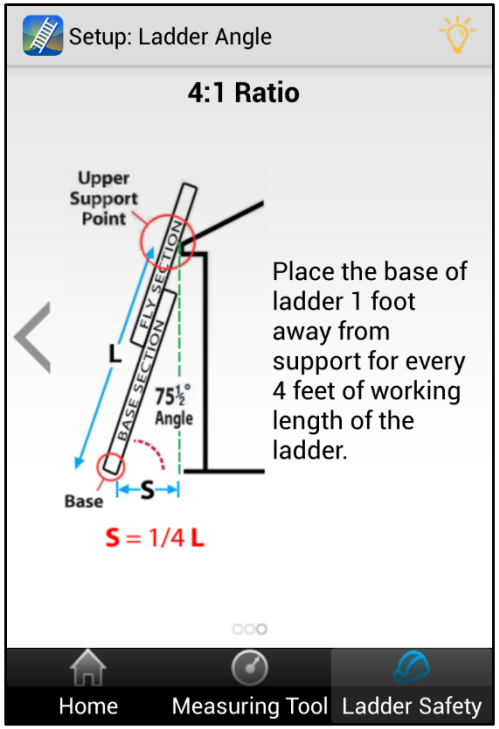
3. Extend hands straight out.

4. The palms of the hands should touch the top of the rung at shoulder level.

The user can also swipe through each method.

National Institute for Occupational Safety and Health NIOSH

4: Extension Ladder-Set Up (cont'd)



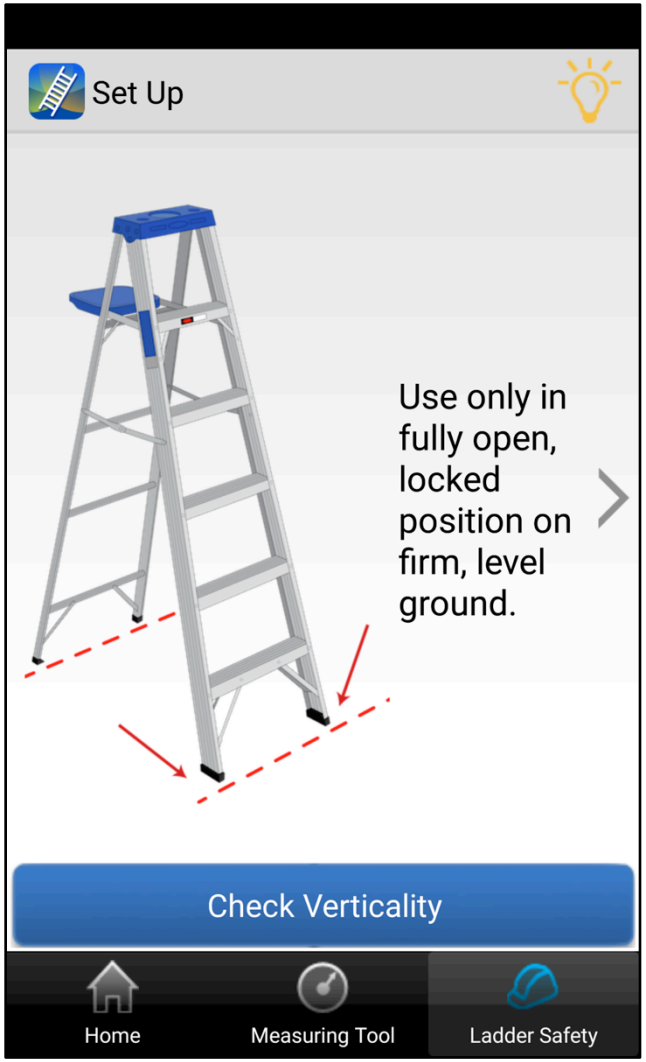
4:1 Ratio

After touching the 4:1 Ratio icon, a large image appears with the instructions displayed on the right.

Instructions: *Place base of ladder 1 foot away from support for every 4 feet of working length of the ladder.*

The user can swipe through each method.

4: Step Ladder-Set Up

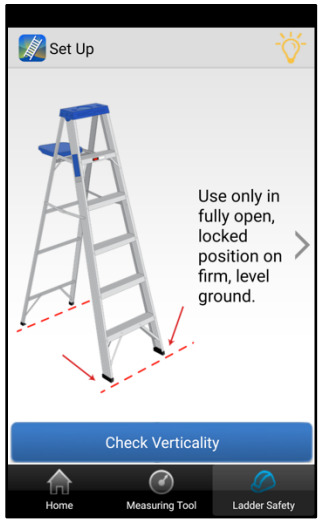


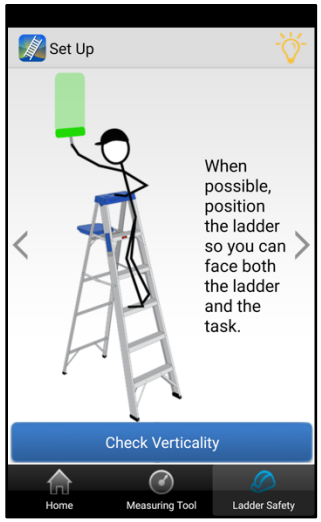
To view all of the images, swipe the page.

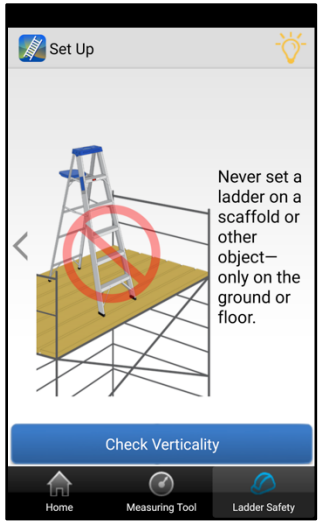
- Use only in fully open, locked position on firm, level ground.
- Make sure that all four feet rest firmly on the ground.
- Avoid setting the ladder up near electrical wires.
- When possible, position the ladder so you can face both the ladder and the task.
- Never set a ladder on a scaffold or other object—only on the ground or floor.

To find out how to check the verticality, tap the **Check Verticality** button.

4: Step Ladder-Set Up (cont'd)





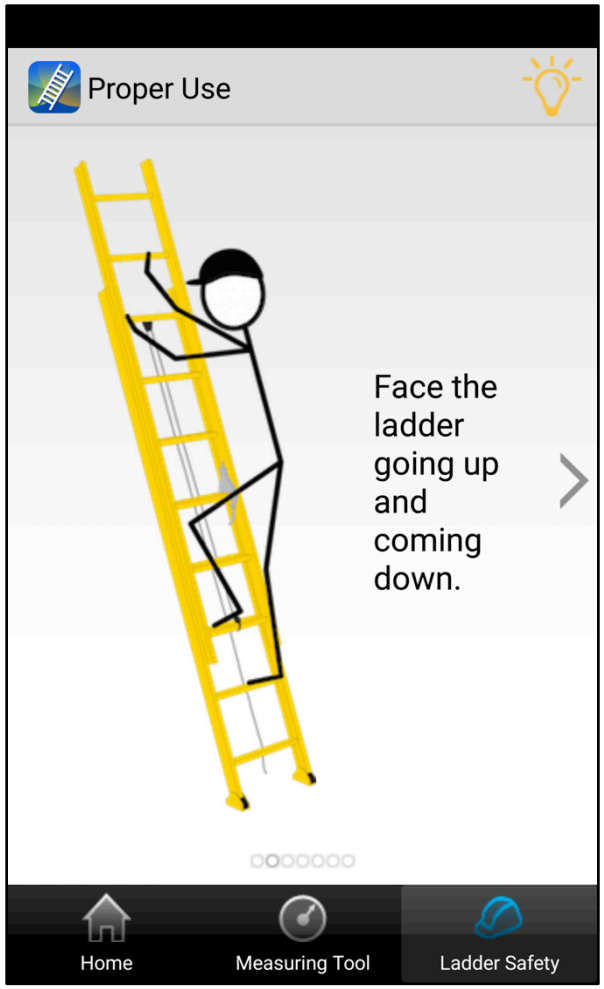


National Institute for Occupational Safety and Health
NIOSH

4: Step Ladder-Set Up (cont'd)

This screen shows the proper way to measure the ladder if it is level.

5: Extension Ladder-Proper Use

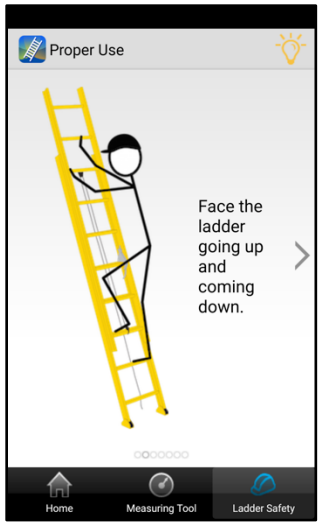


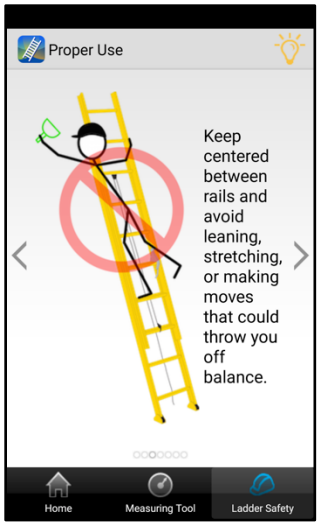
To view all of the images, swipe the page.

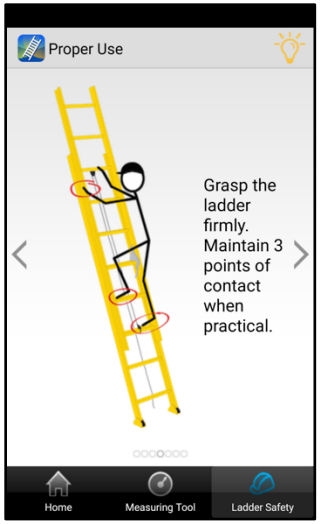
- Face the ladder going up and coming down
- Keep centered between rails and avoid leaning, stretching, or making moves that could throw you off balance
- Grasp the ladder firmly. Maintain 3-point contact when practical
- Do not carry excessive loads – it may increase your risk of falling
- One person at a time
- Do not stand on the top 3 rungs
- When accessing elevated surfaces, the ladder should extend approximately 3 ft. above the upper support point and the top of the ladder should be secured from movement

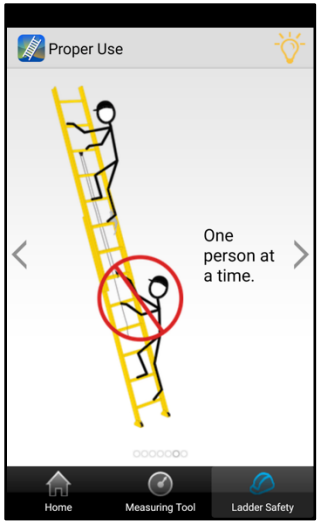
National Institute for Occupational Safety and Health NIOSH

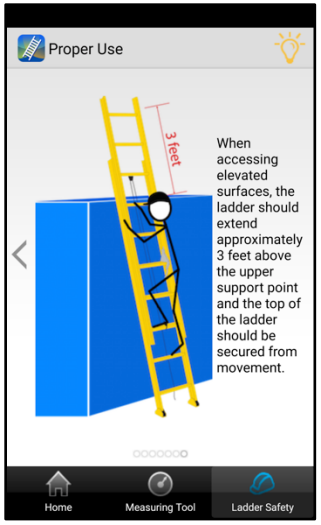
5: Extension Ladder-Proper Use (cont'd)





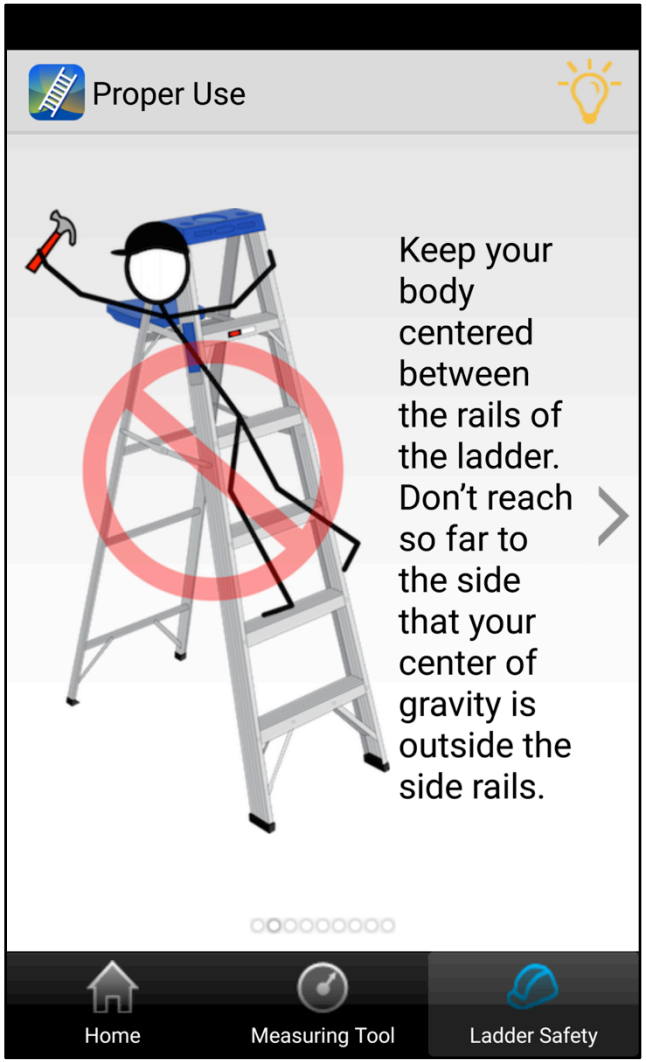






National Institute for Occupational Safety and Health
NIOSH

5: Step Ladder-Proper Use

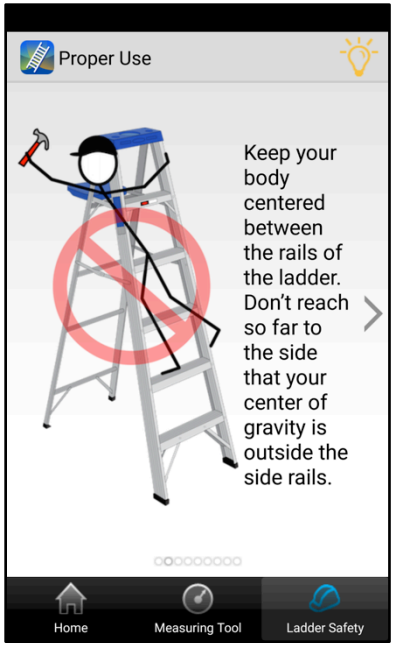


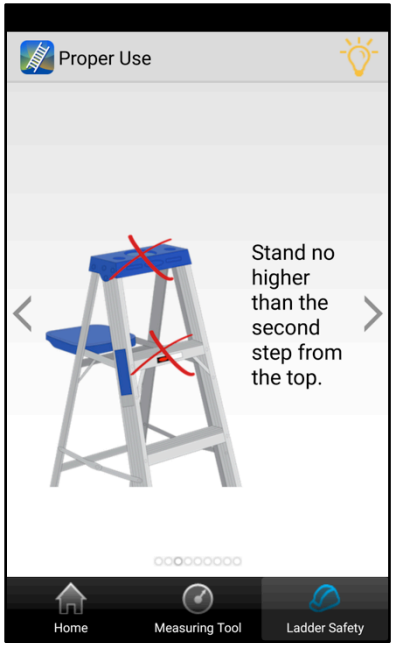
To view all of the images, swipe the page.

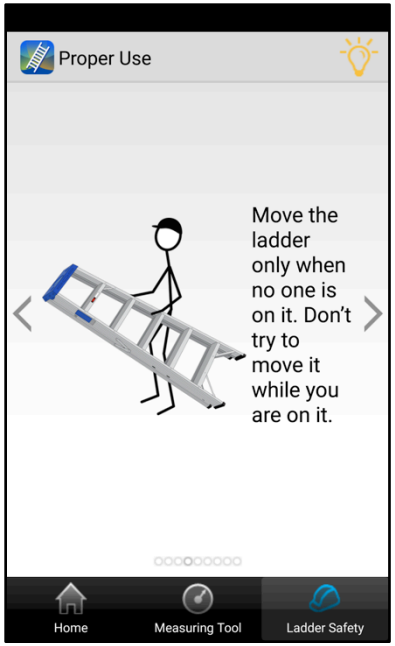
- Keep your body centered between the rails of the ladder. Don't reach so far to the side that your center of gravity is outside the side rails.
- Stand no higher than the second step from the top.
- Move the ladder only when no one is on it. Don't try to move it while you are on it.
- One person at a time on the ladder—unless it is designed with steps on both sides.
- Face the ladder and maintain three points of contact when climbing.
- Do not carry tools or materials up or down the ladder. Use a tool belt or have them handed up to you.
- Do not climb the rear section of the ladder unless it is designed with steps.
- Grip and lean into the ladder to maintain balance.
- NEVER climb a stepladder in the closed position or leaning against something.

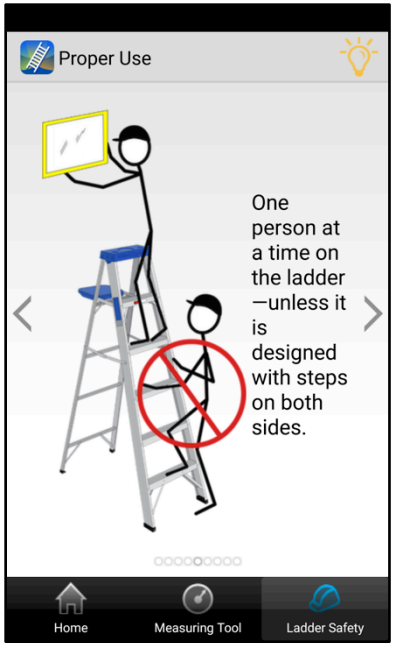
National Institute for Occupational Safety and Health NIOSH

5: Step Ladder-Proper Use (cont'd)







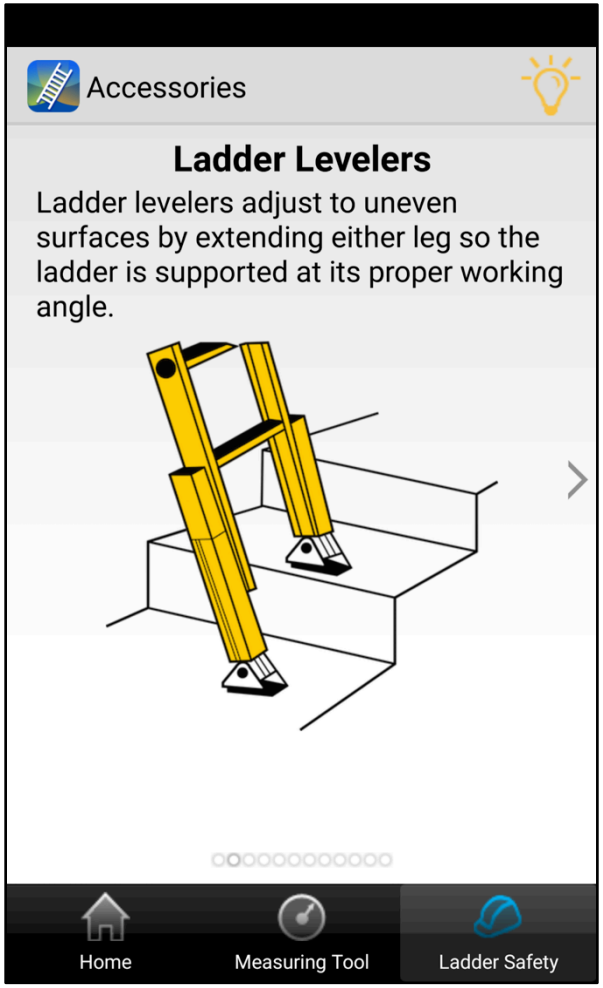


National Institute for Occupational Safety and Health
NIOSH

5: Step Ladder-Proper Use (cont'd)

National Institute for Occupational Safety and Health
NIOSH

6: Extension Ladder-Accessories

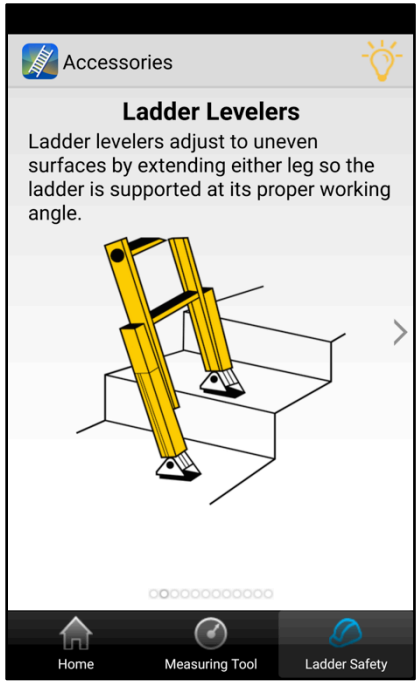


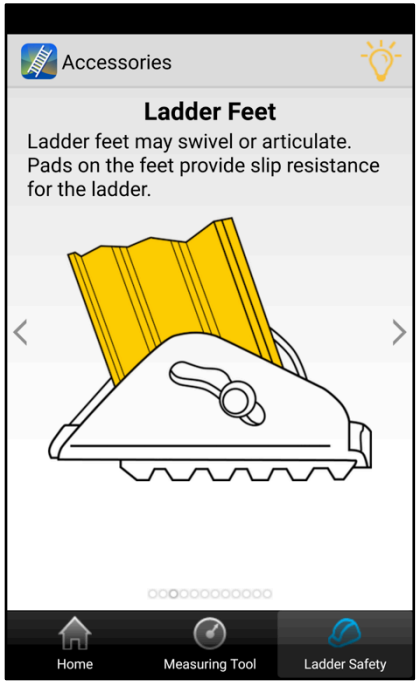
To view the following images and descriptions, swipe the page.

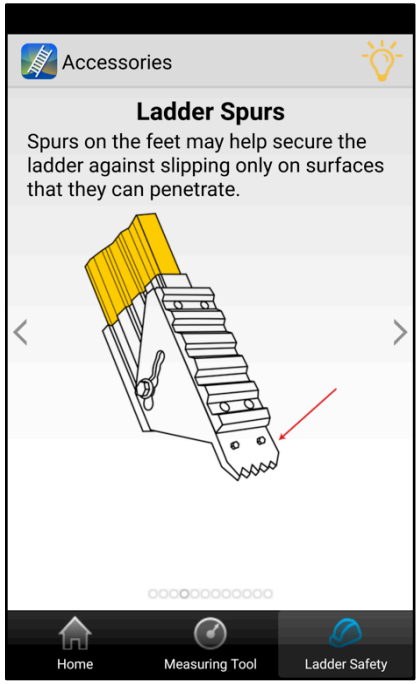
- Ladder levelers
- Ladder feet, spurs, and spur plates
- Stabilizer straps
- Side rail end covers
- Stabilizers and standoffs
- Gutter protectors
- Corner standoffs
- V-rungs
- Pole chain/strap and pole lashes
- Cable (strand) hooks

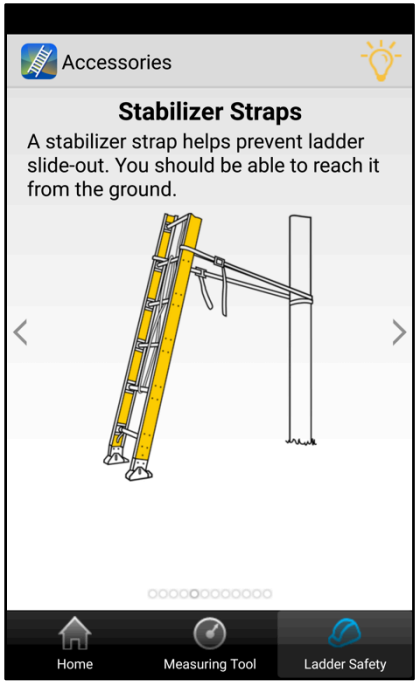
National Institute for Occupational Safety and Health NIOSH

6: Extension Ladder-Accessories (cont'd)



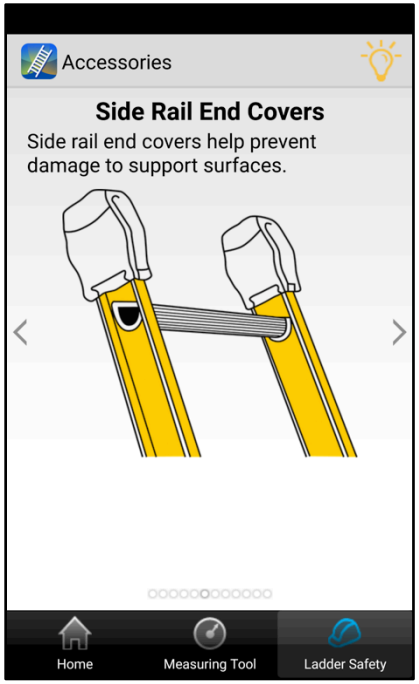


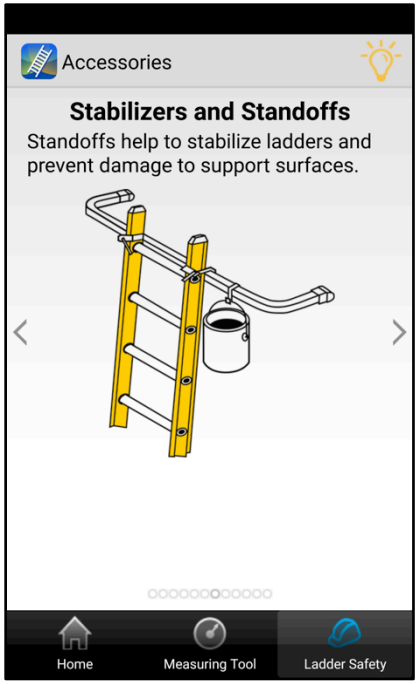


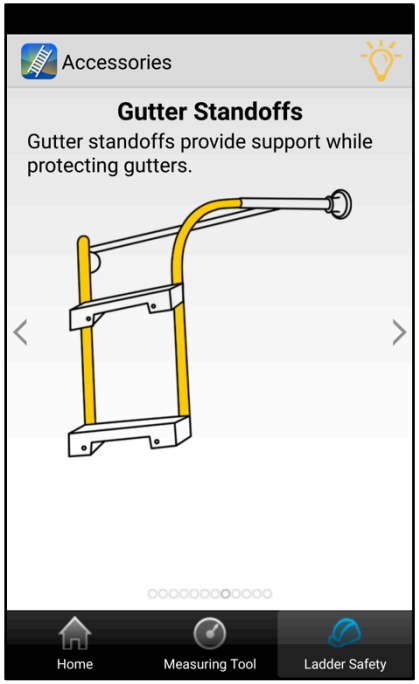


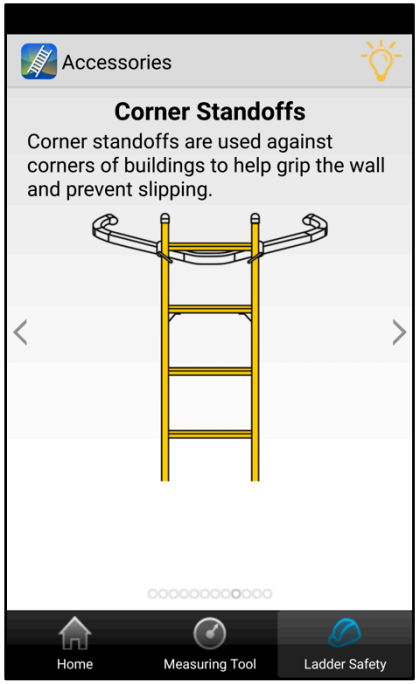
National Institute for Occupational Safety and Health
NIOSH

6: Extension Ladder-Accessories (cont'd)



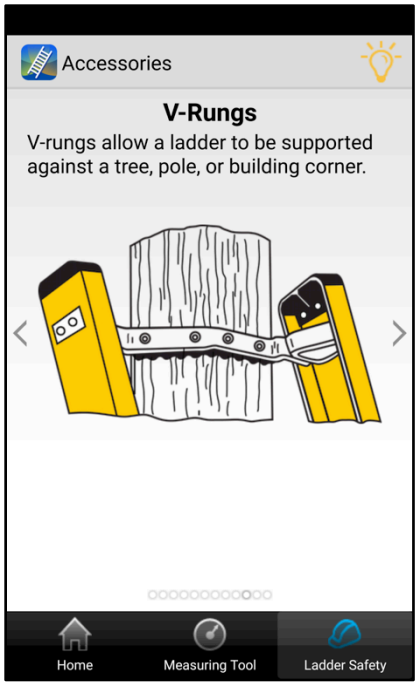


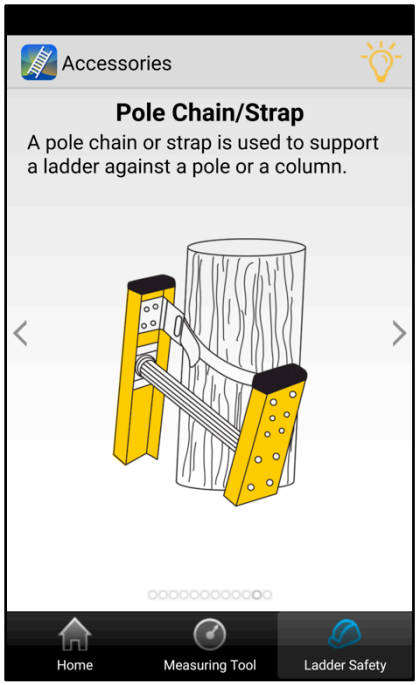


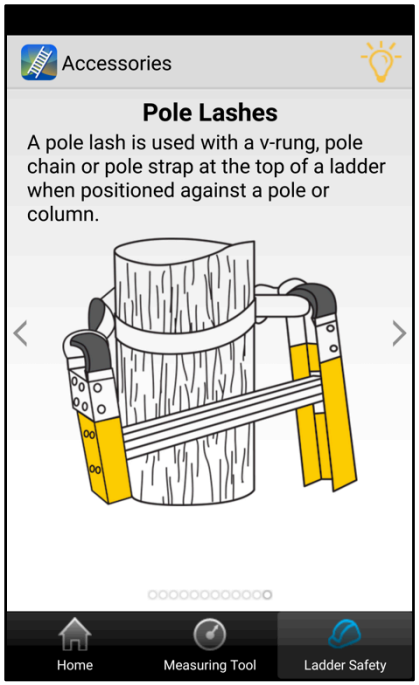


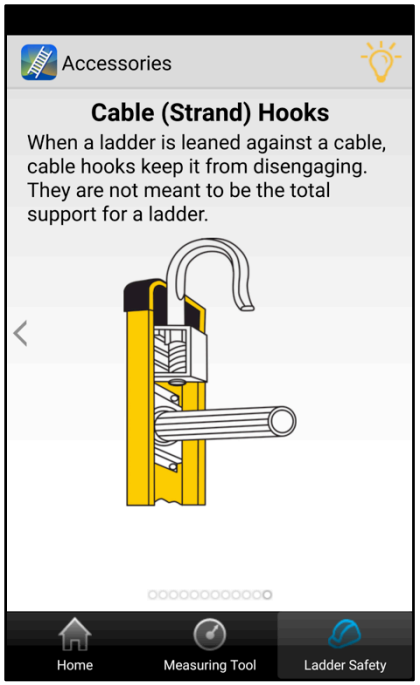
National Institute for Occupational Safety and Health
NIOSH

6: Extension Ladder-Accessories (cont'd)



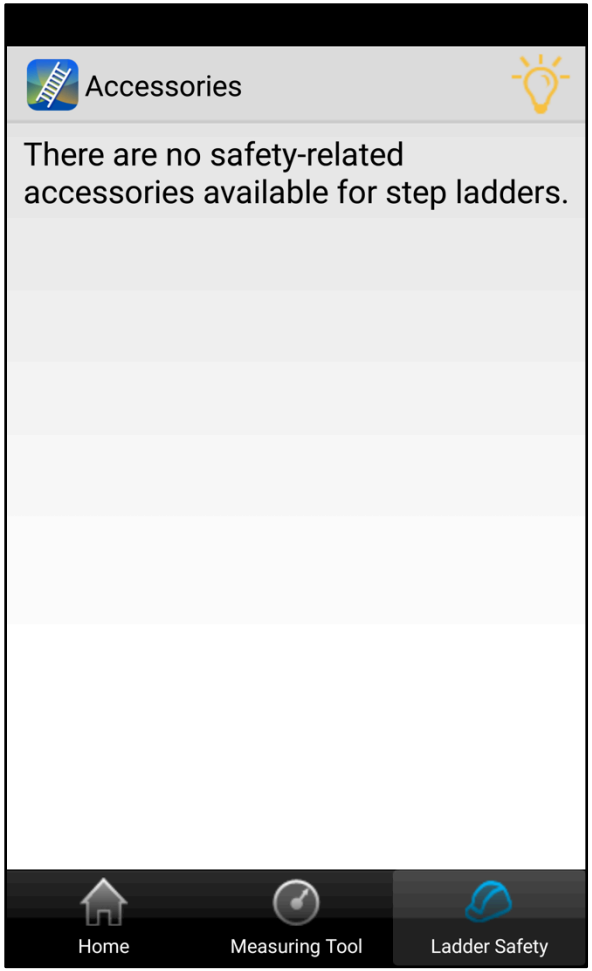






National Institute for Occupational Safety and Health
NIOSH

6: Step Ladder-Accessories



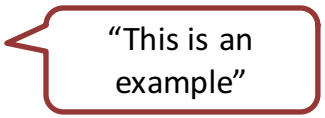
Since there are no safety related accessories for step ladders, the user is notified that there are no safety accessories on this tab.

Accessibility Features

The Ladder Safety app features a high-contrast mode and is compatible with TalkBack, Explore by Touch, and similar Accessibility Services.

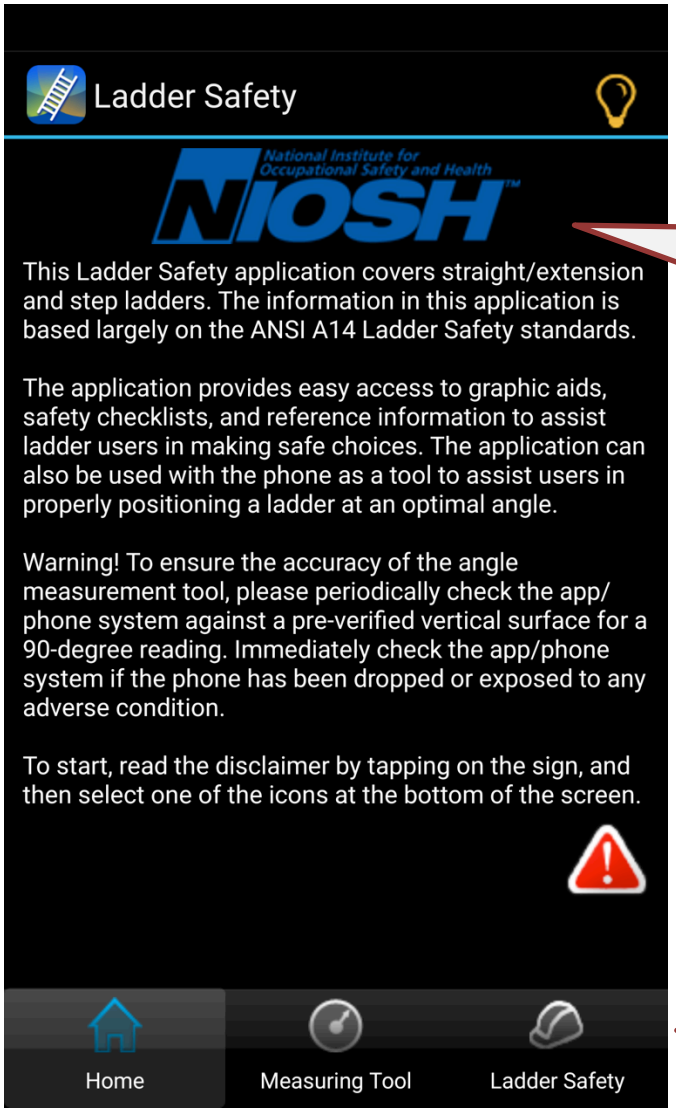
Please refer to your device manual for instructions to enable the Accessibility Services.

** The speech bubbles, similar to the one below, will denote the TalkBack and Explore by Touch responses.*



National Institute for Occupational Safety and Health NIOSH

Home Screen: Ladder Application



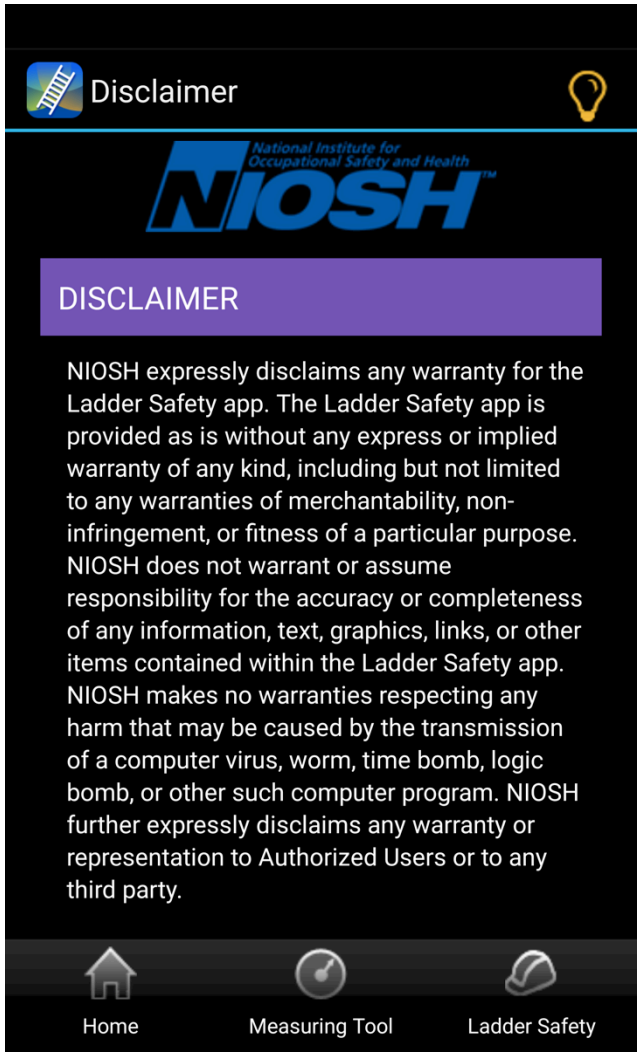
"High contrast"

"NIOSH, National Institute for Occupational Safety and Health"

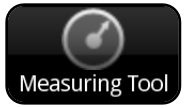
The text displayed on the screen

"Disclaimer"

The labels for the associated button



National Institute for Occupational Safety and Health
NIOSH



Measuring Tool

All text displayed will read aloud the associated text.

"NIOSH, National Institute for Occupational Health and Safety

"Help"

"Home"

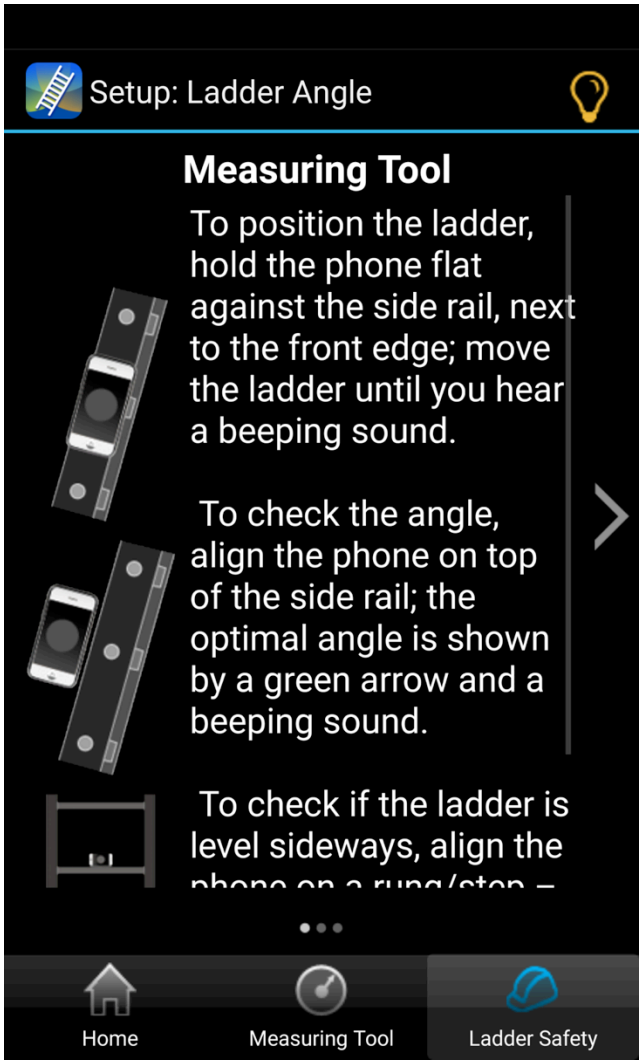
National Institute for Occupational Safety and Health NIOSH

Measuring Tool (Cont'd)

National Institute for Occupational Safety and Health
NIOSH

Measuring Tool

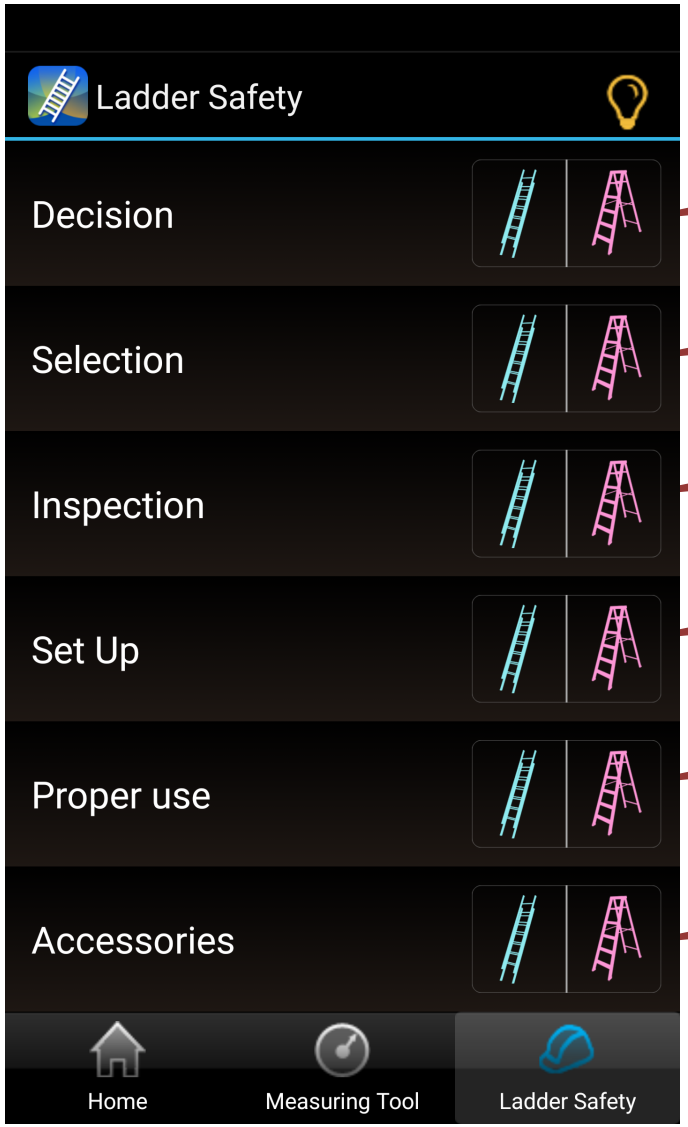
Help



The text display as displayed.

National Institute for Occupational Safety and Health NIOSH

Ladder Safety



[Extension Ladder/Step Ladder] “Decision”

[Extension Ladder/Step Ladder] “Selection”

[Extension Ladder/Step Ladder] “Inspection”

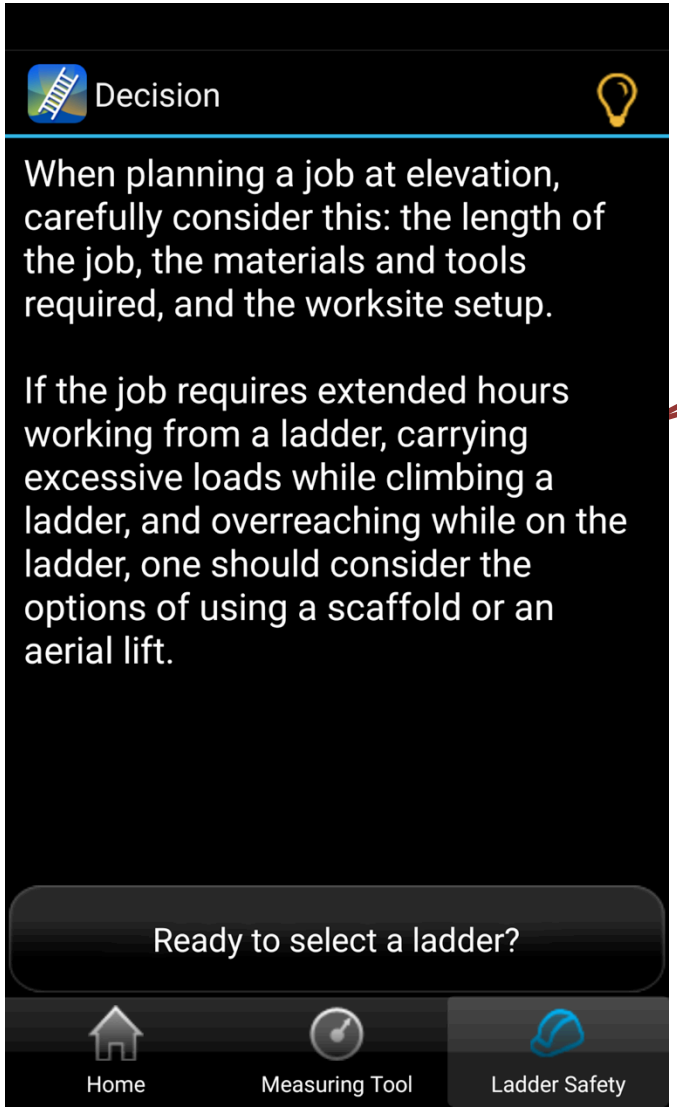
[Extension Ladder/Step Ladder] “Set Up”

[Extension Ladder/Step Ladder] “Proper Use”

[Extension Ladder/Step Ladder] “Accessories”

National Institute for Occupational Safety and Health
NIOSH

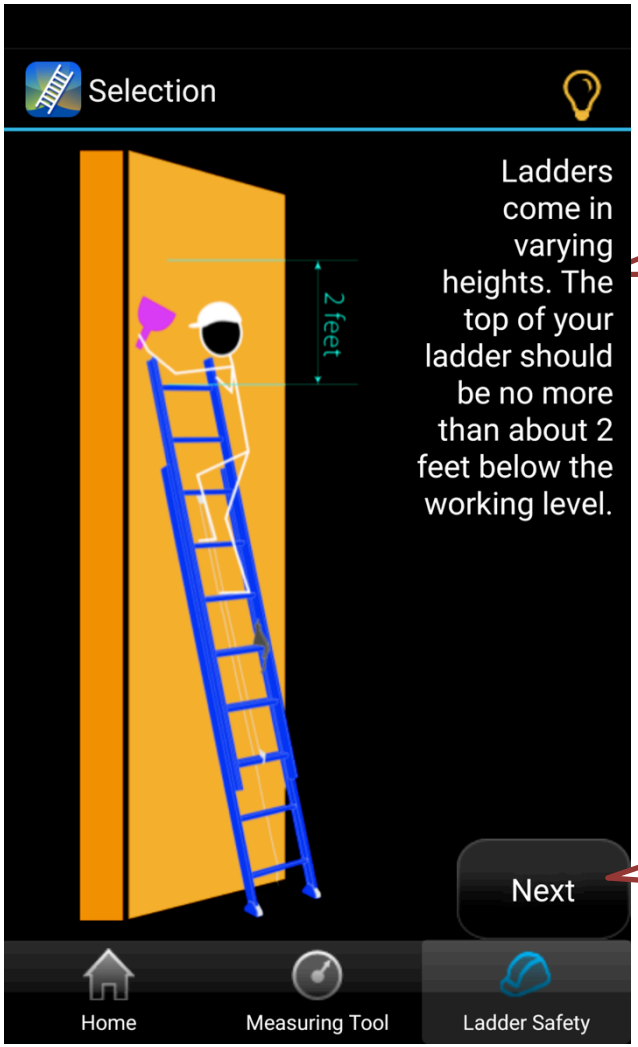
1: Decision



The text as it appears on the screen.

"Ready to select a ladder"

2: Extension Ladder-Selection Home Page

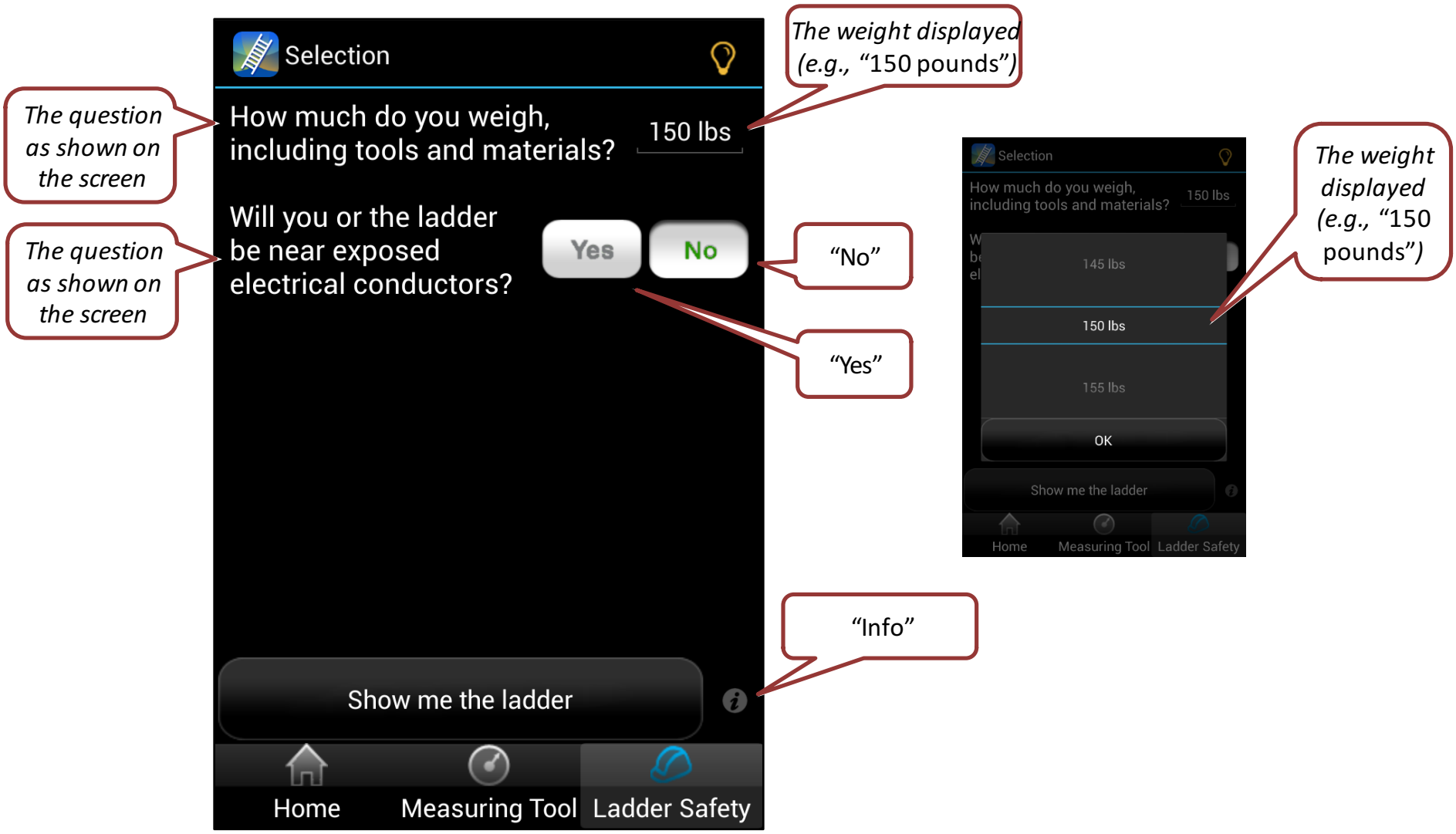


Text as written

Next

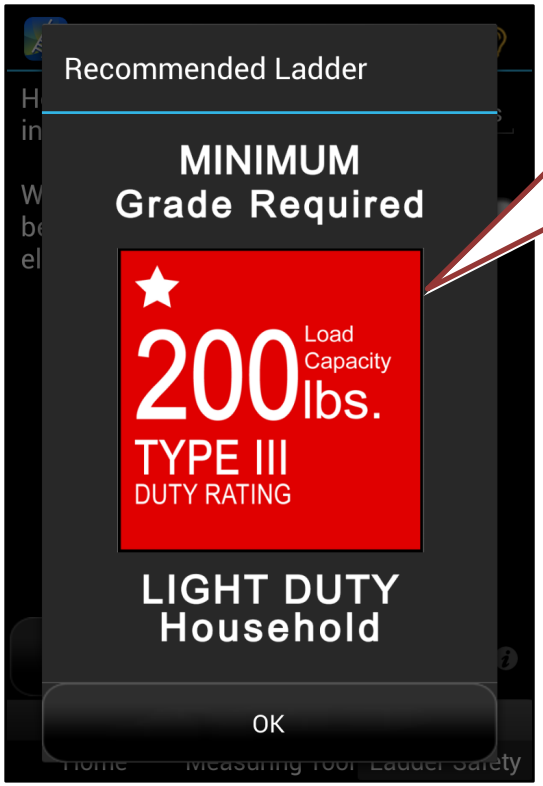
National Institute for Occupational Safety and Health
NIOSH

2: Extension Ladder-Selection



2: Extension Ladder-Selection

Show Me The Ladder



"Recommended ladder, minimum grade required, 200 pounds load capacity, type 3 duty rating, light duty household."

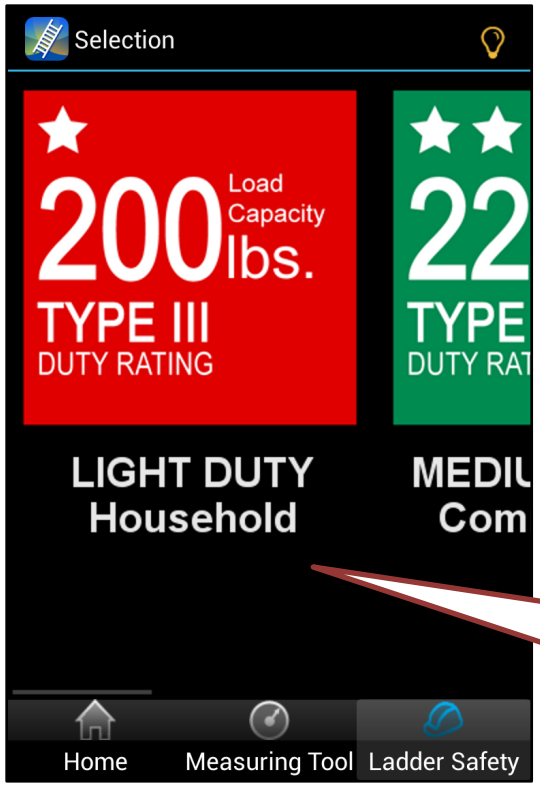
"Recommended ladder, minimum grade required, 200 pounds load capacity, type 3 duty rating, light duty household. Important, use a ladder made of non-conductive material."

A similar text is read aloud for the Type II, Type I, Type IA, and Type IAA stickers

National Institute for Occupational Safety and Health NIOSH

2: Extension Ladder-Selection

Sample Rating Stickers



"200 pounds load capacity, type 3 duty rating, light duty household."

Below is the transcript for all rating stickers.

Type 3: "200 pounds load capacity, type 3 duty rating, light duty household."

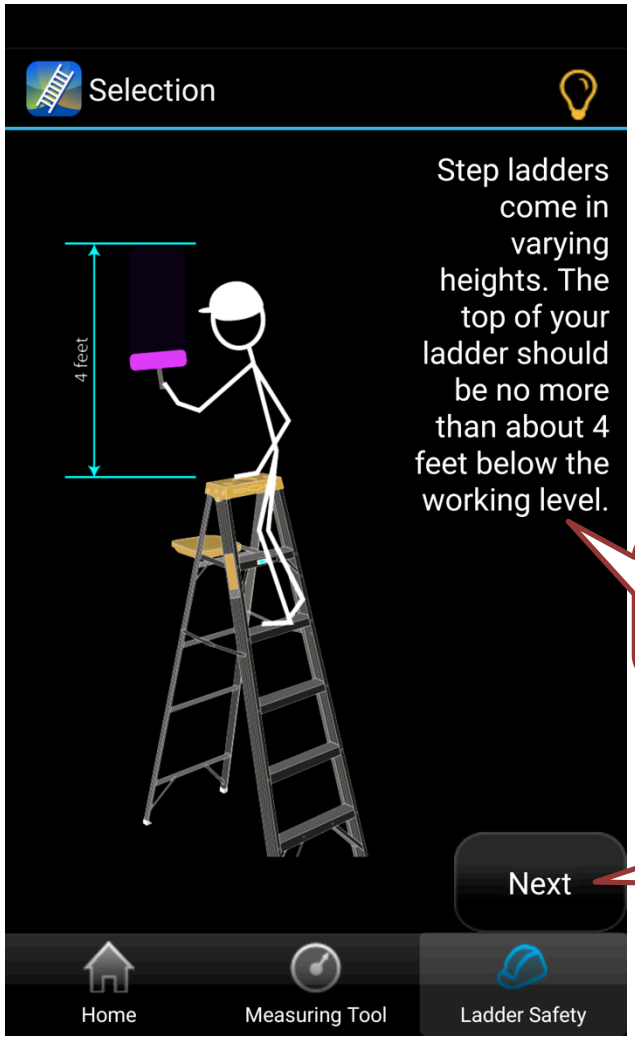
Type 2: "225 pounds load capacity, type 2 duty rating, medium duty household."

Type 1: "250 pounds load capacity, type 1 duty rating, heavy duty industrial."

Type 1A: "300 pounds load capacity, type 1A duty rating, extra heavy duty industrial."

Type 1AA: "375 pounds load capacity, type 1AA duty rating, special duty industrial."

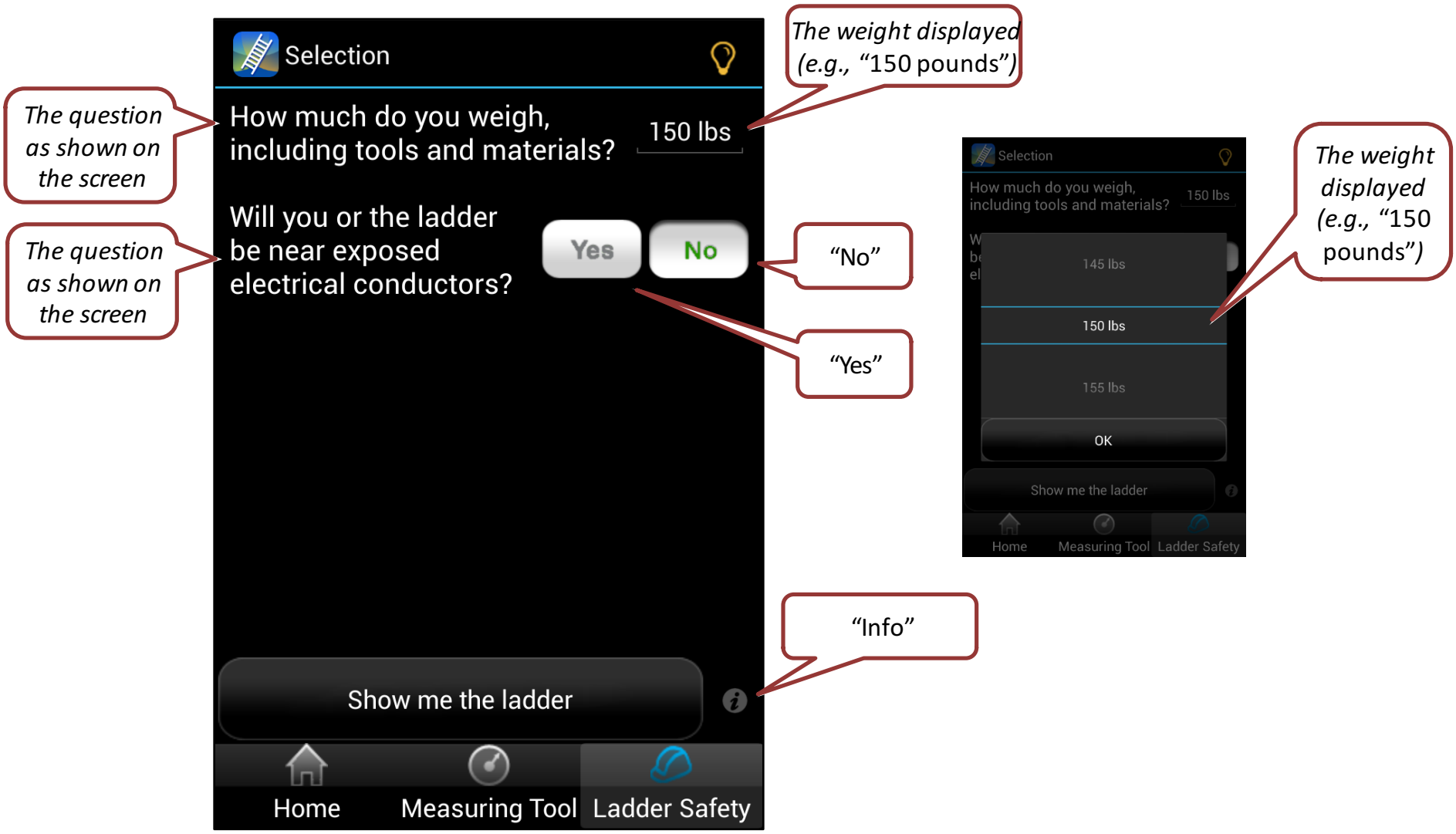
2: Step Ladder-Selection Home Page



The text as it appears on the screen.

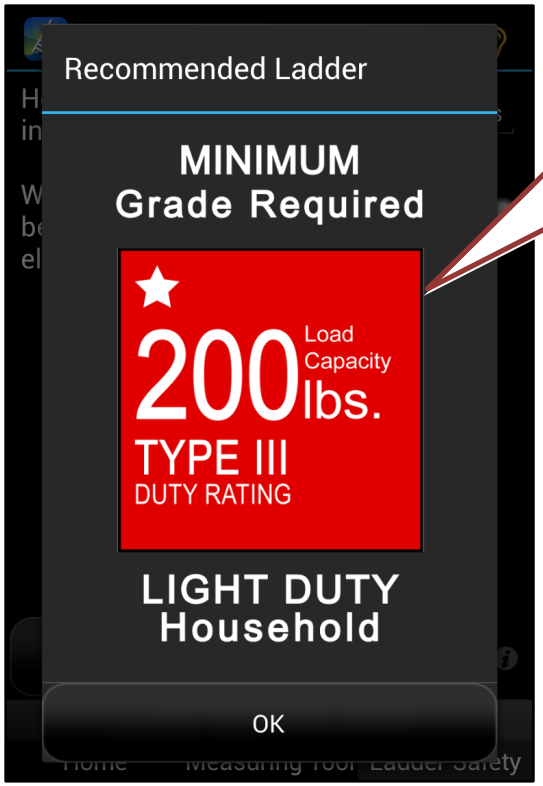
Next

2: Step Ladder-Selection



2: Step Ladder-Selection

Show Me The Ladder



"Recommended ladder, minimum grade required, 200 pounds load capacity, type 3 duty rating, light duty household."

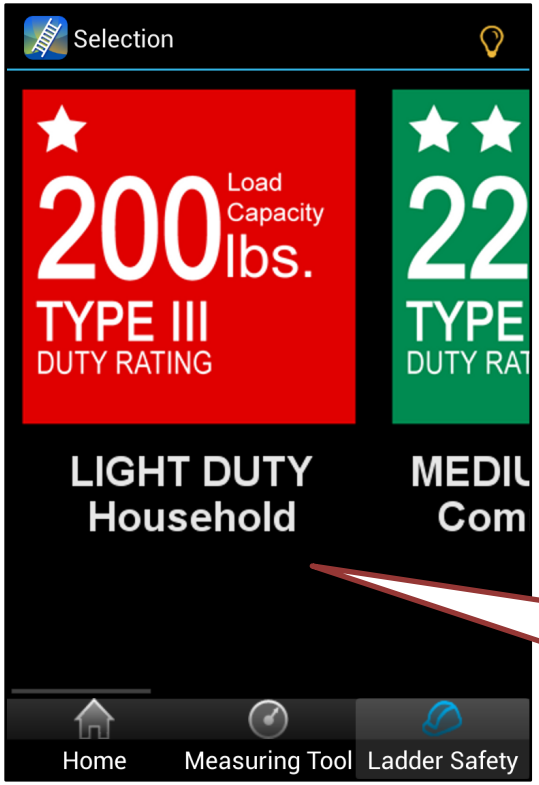
"Recommended ladder, minimum grade required, 200 pounds load capacity, type 3 duty rating, light duty household. Important, use a ladder made of non-conductive material."

A similar text is read aloud for the Type II, Type I, Type IA, and Type IAA stickers

National Institute for Occupational Safety and Health NIOSH

2: Step Ladder-Selection

Sample Rating Stickers



"200 pounds load capacity, type 3 duty rating, light duty household."

Below is the transcript for all rating stickers.

Type 3: "200 pounds load capacity, type 3 duty rating, light duty household."

Type 2: "225 pounds load capacity, type 2 duty rating, medium duty household."

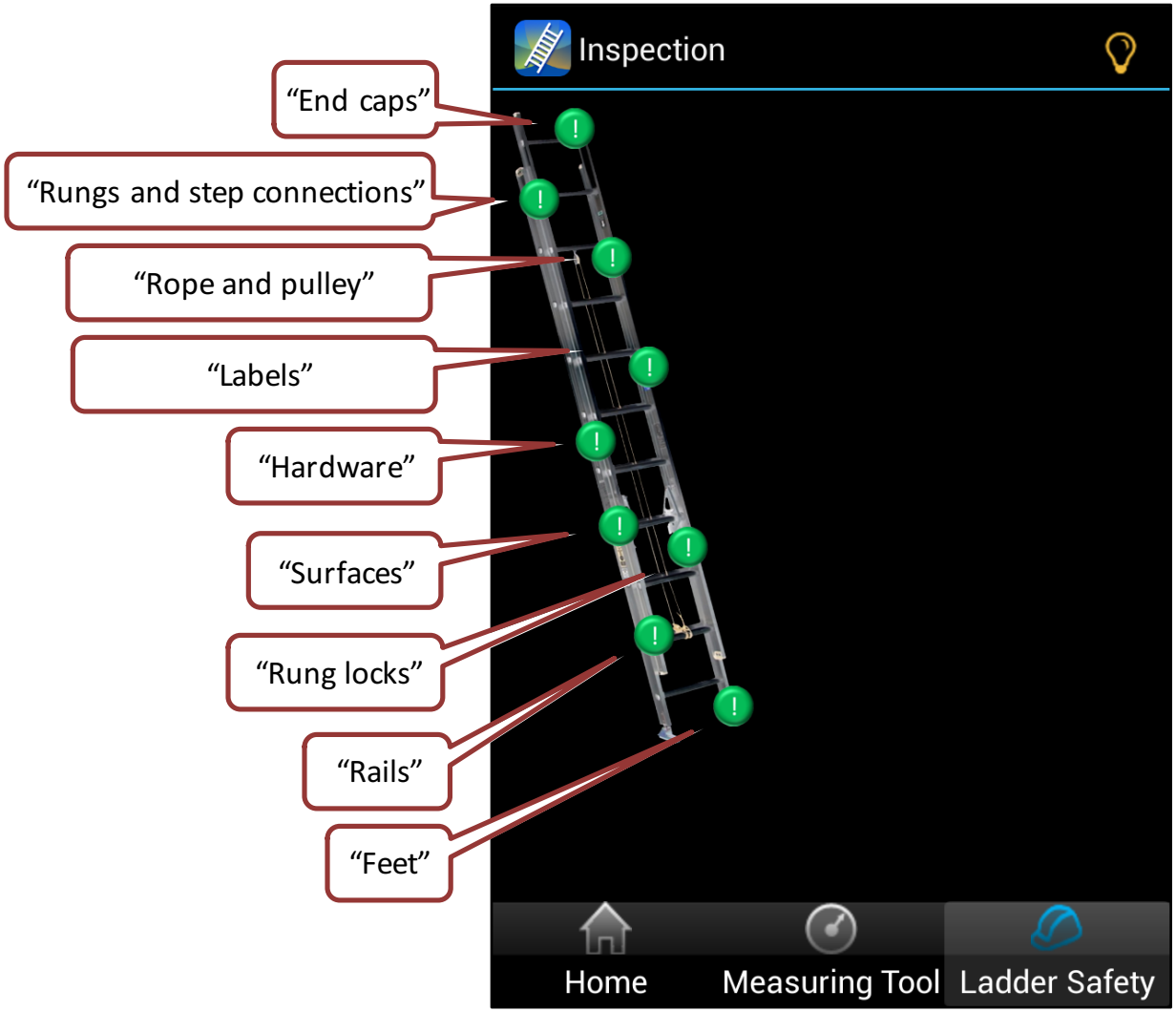
Type 1: "250 pounds load capacity, type 1 duty rating, heavy duty industrial."

Type 1A: "300 pounds load capacity, type 1A duty rating, extra heavy duty industrial."

Type 1AA: "375 pounds load capacity, type 1AA duty rating, special duty industrial."

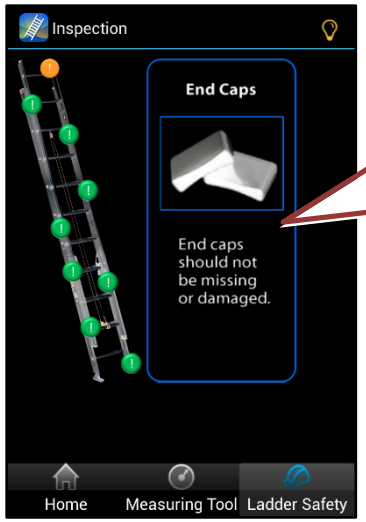
National Institute for Occupational Safety and Health NIOSH

3: Extension Ladder-Inspection

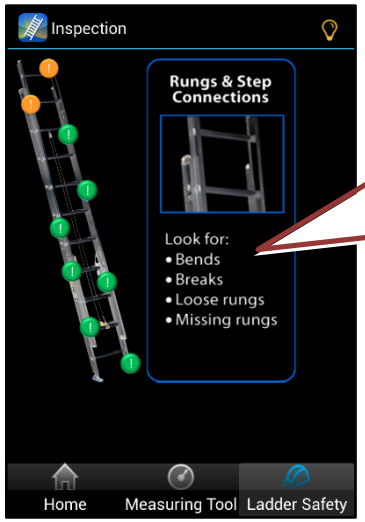


National Institute for Occupational Safety and Health NIOSH

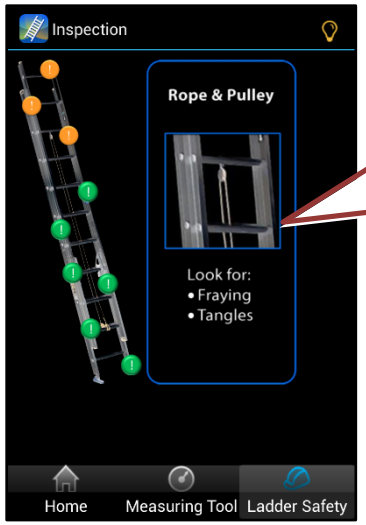
3: Extension Ladder-Inspection (cont'd)



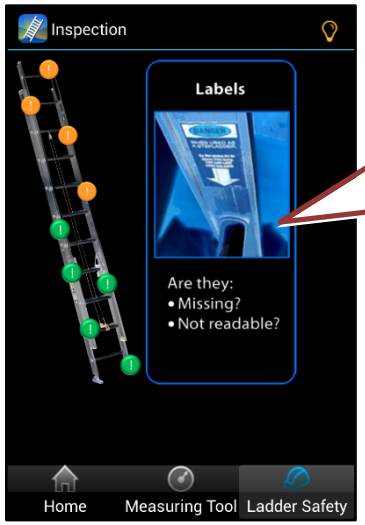
"End caps should not be missing or damaged"



"Look for bends, breaks, loose rungs, and missing rungs on the rungs and step connections



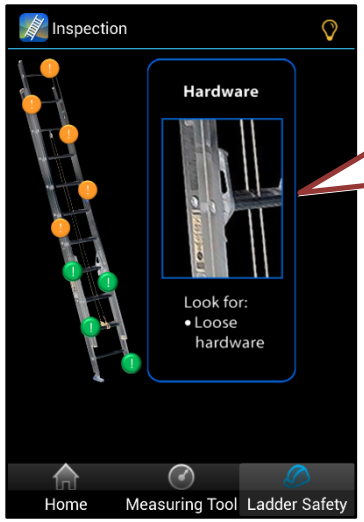
"Look for fraying and tangles on the rope and pulley"



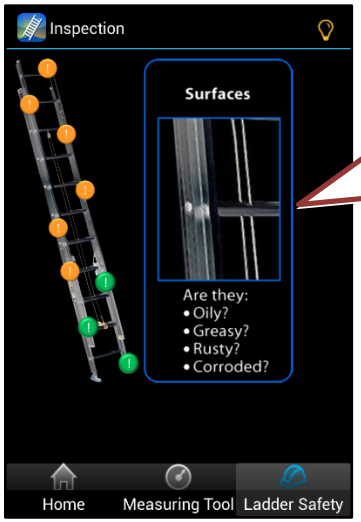
"Are labels missing or not readable?"

National Institute for Occupational Safety and Health NIOSH

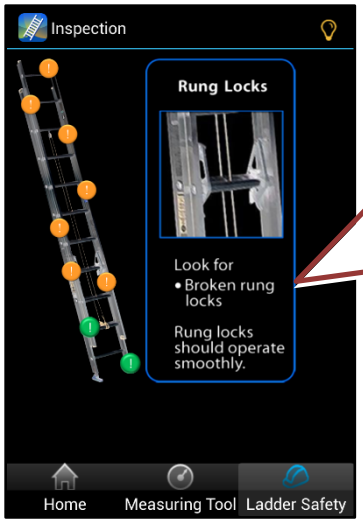
3: Extension-Inspection (cont'd)



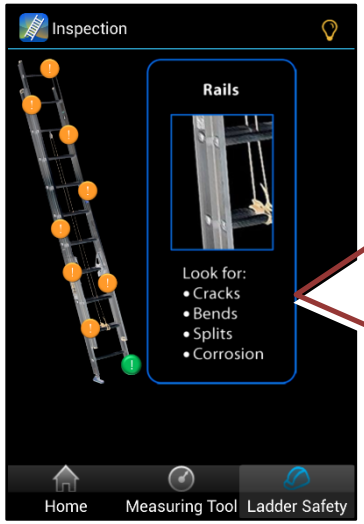
"Look for loose hardware"



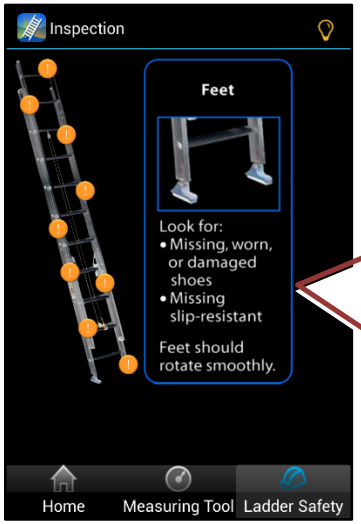
"Are the surfaces oily, greasy, rusty, or corroded?"



"Look for broken rung locks. Rung locks should operate smoothly."



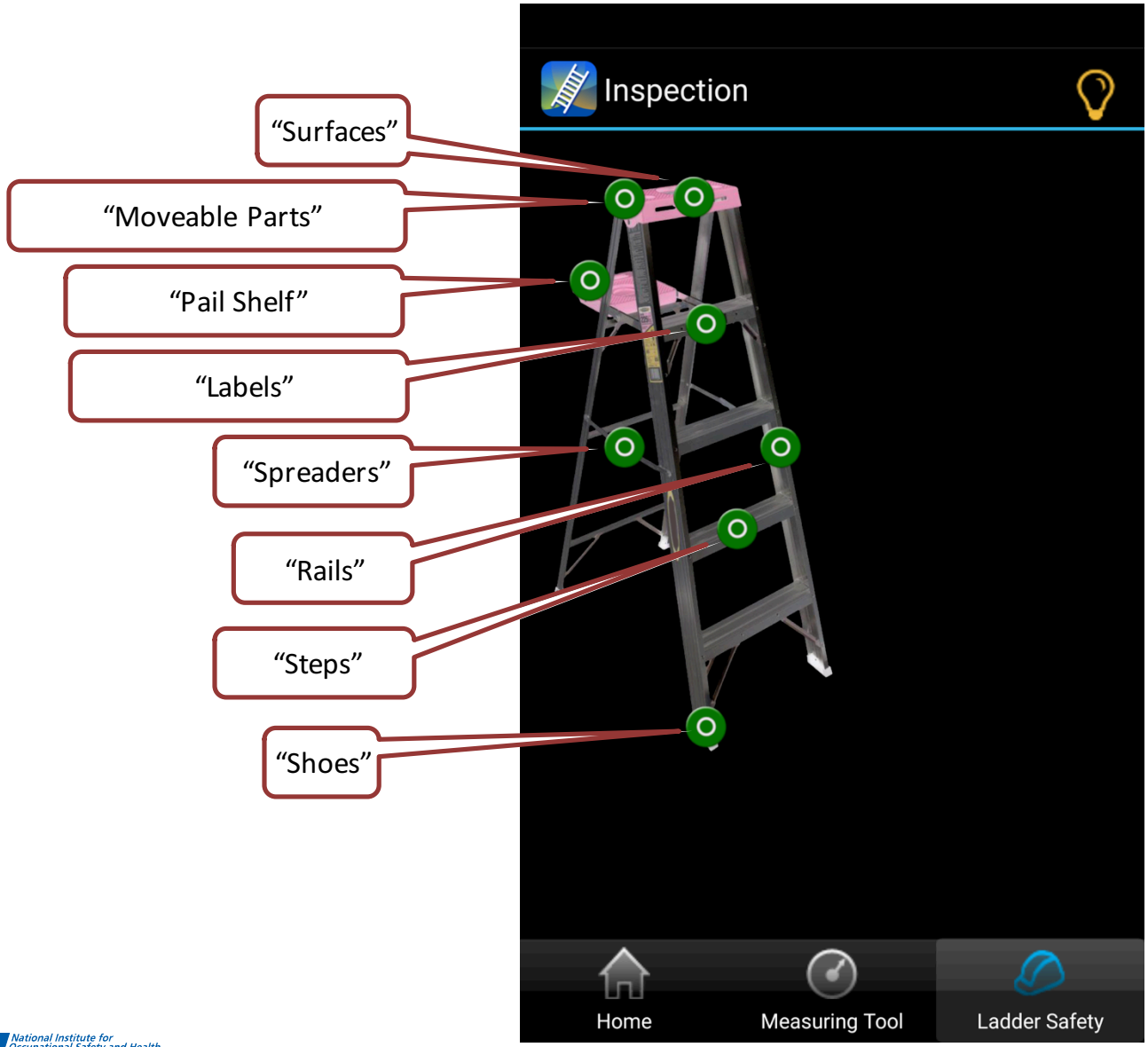
"Look for cracks, bends, splits, and corrosion on the rails"



"Look for missing, worn, or damaged shoes on the feet. Look for missing slip-resistant on the feet. The feet should rotate smoothly"

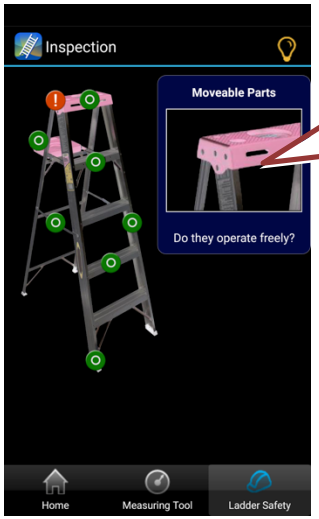
National Institute for Occupational Safety and Health NIOSH

3: Step Ladder-Inspection

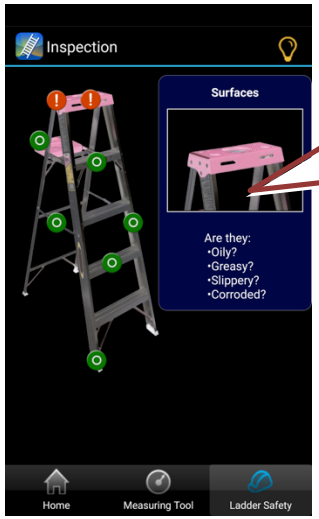


National Institute for Occupational Safety and Health
NIOSH

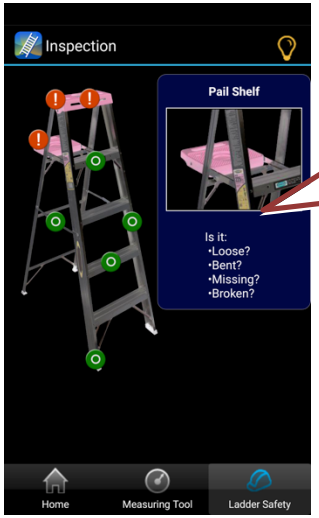
3: Step Ladder-Inspection



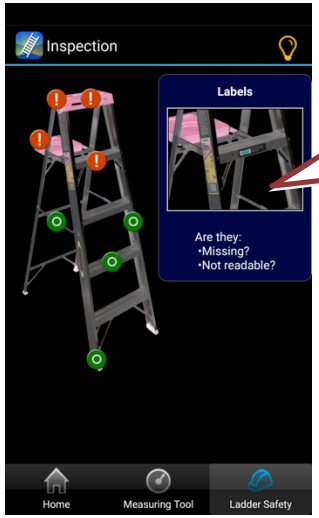
"Do they operate freely?"



"Are they Oily, Greasy, Slippery Corroded"



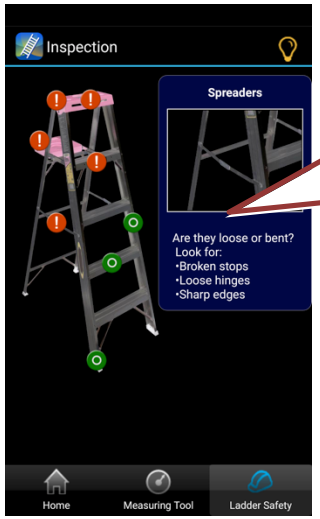
Is it loose, bent, missing, broken?"



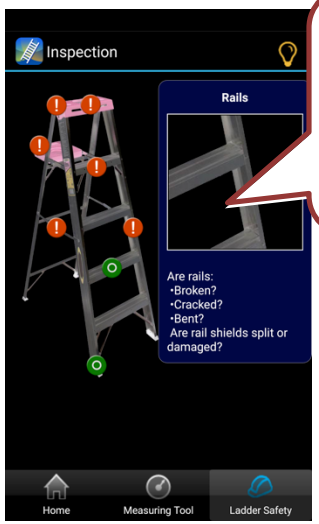
"Are they missing, not readable?"

National Institute for Occupational Safety and Health
NIOSH

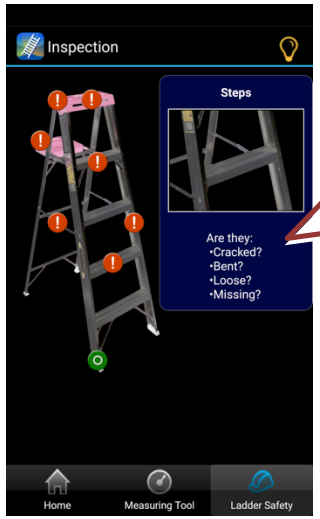
3: Step Ladder-Inspection (cont'd)



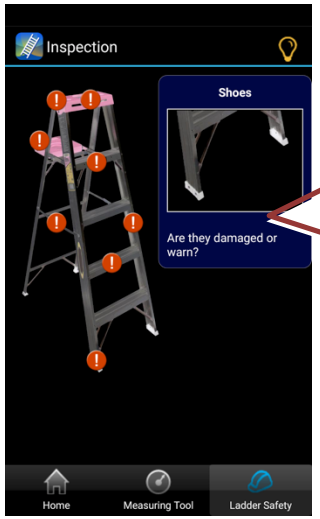
"Are they loose or bent. Look for broken steps, loose hinges, sharp edges"



"Are rails broken, cracked, bent. Are rail shields split or damaged?



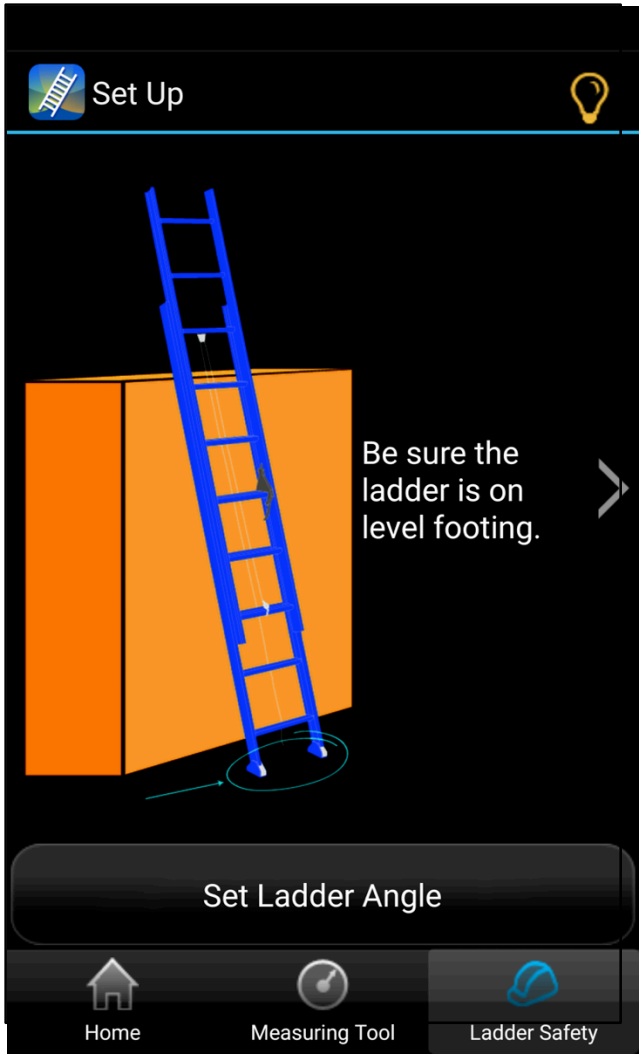
"Are they cracked, bent, loose, missing?"



"Are they damaged or worn?

National Institute for Occupational Safety and Health
NIOSH

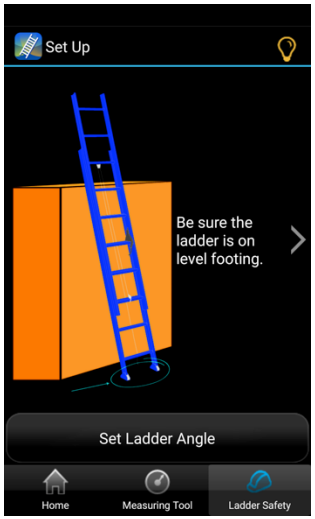
4: Extension Ladder-Set Up

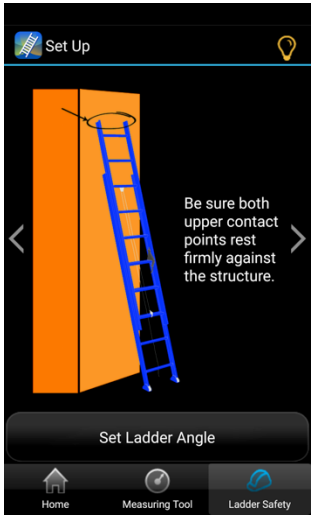


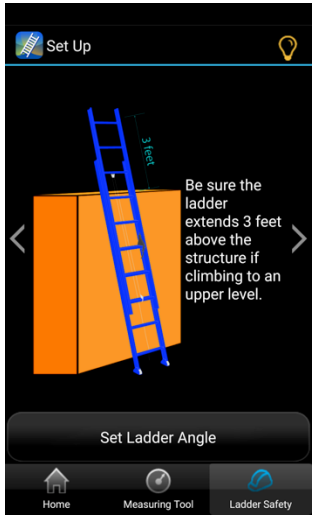
The text as it appears on the screen

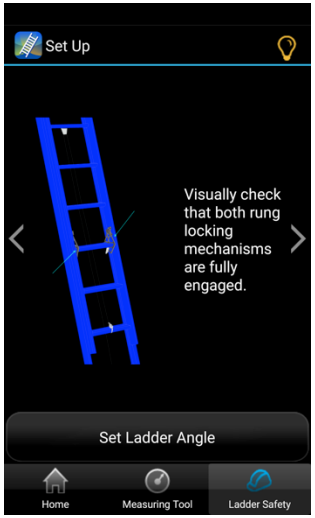
"Set ladder angle"

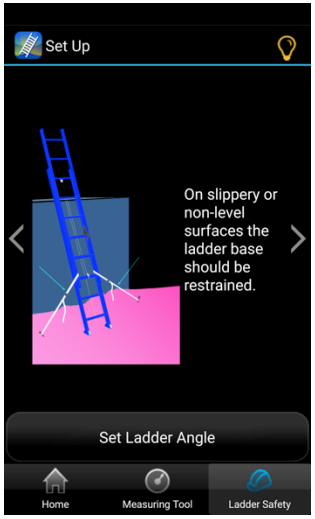
5: Extension Ladder-Set Up (cont'd)

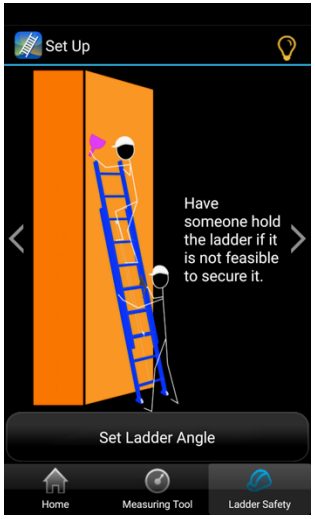


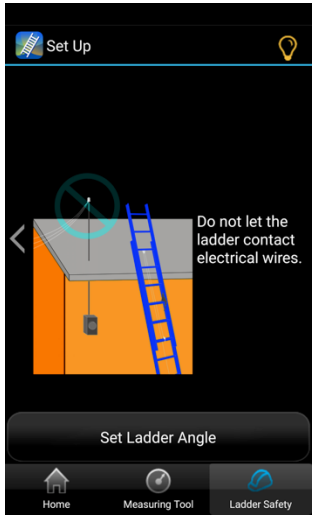






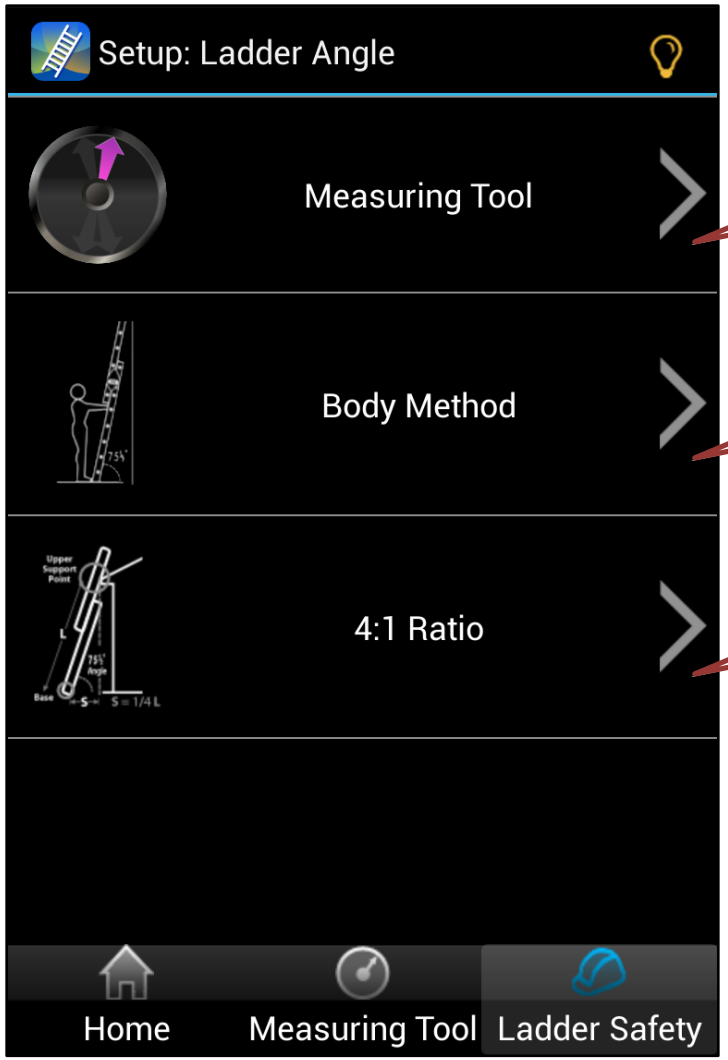






National Institute for Occupational Safety and Health
NIOSH

4: Extension Ladder-Set Up (cont'd)



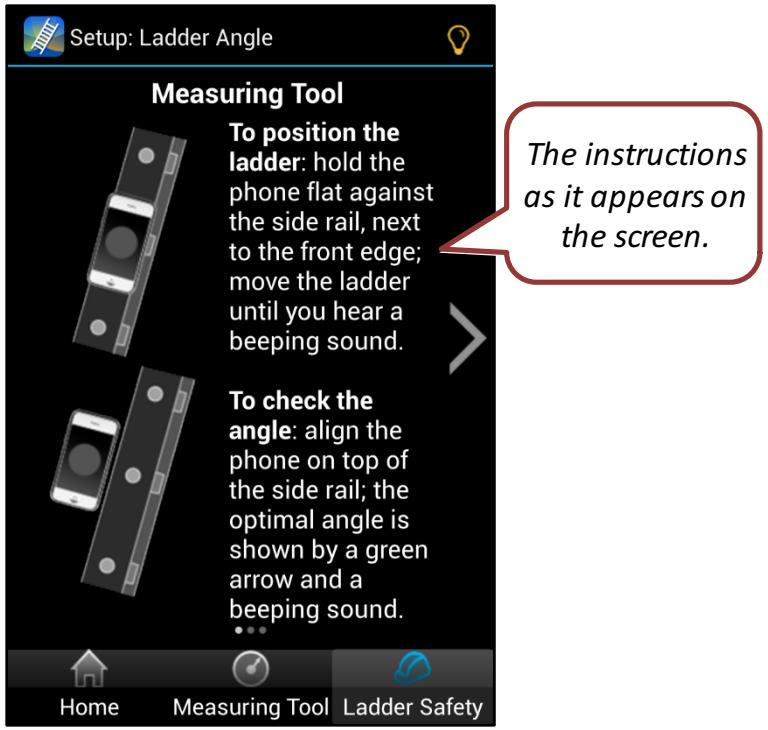
"How to use the measuring tool"

"How to use the body method"

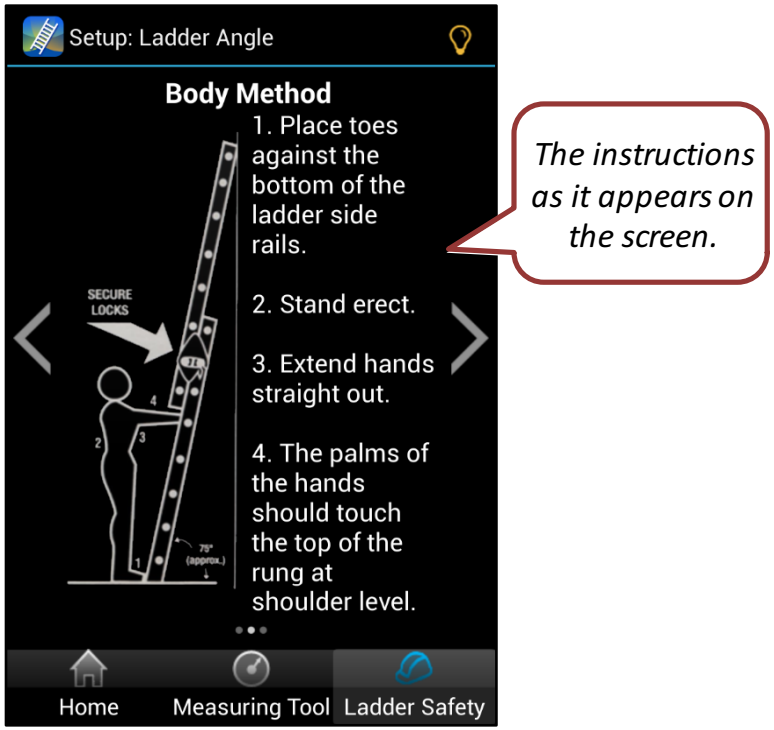
"How to use the four to one ratio"

National Institute for Occupational Safety and Health NIOSH

4: Extension Ladder-Set Up (cont'd)



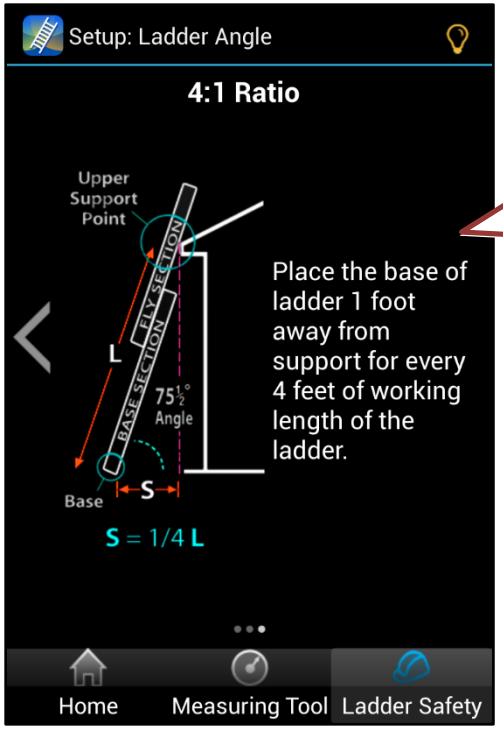
The instructions as it appears on the screen.



The instructions as it appears on the screen.

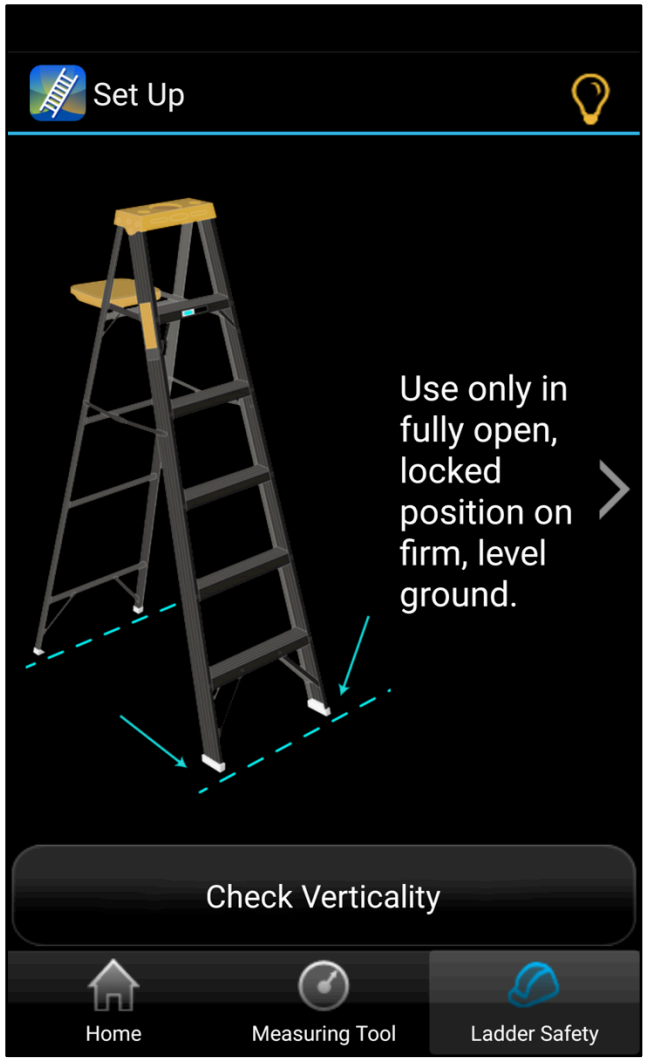
National Institute for Occupational Safety and Health NIOSH

4: Extension Ladder-Set Up (cont'd)



The instructions as it appears on the screen.

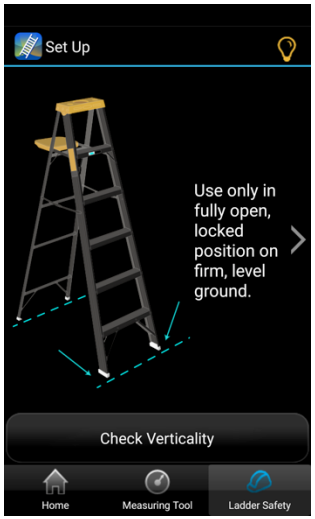
4: Step Ladder-Set Up

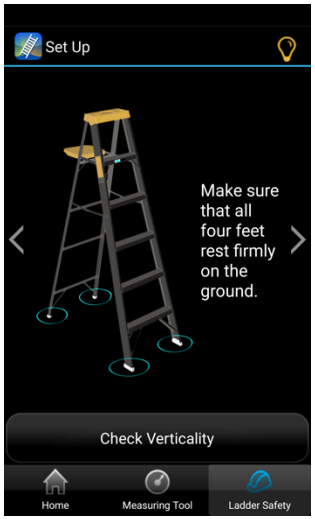


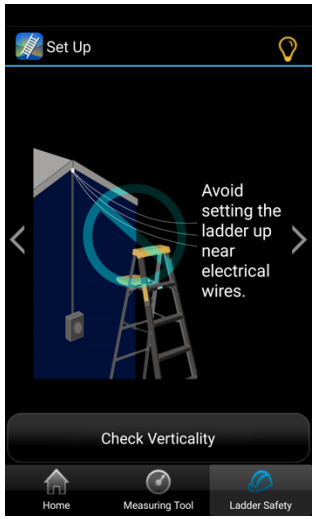
The text as shown on the screen

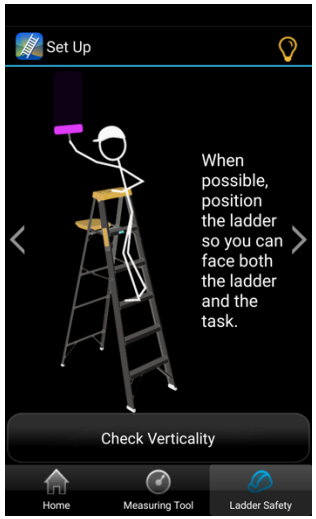
"Check Verticality"

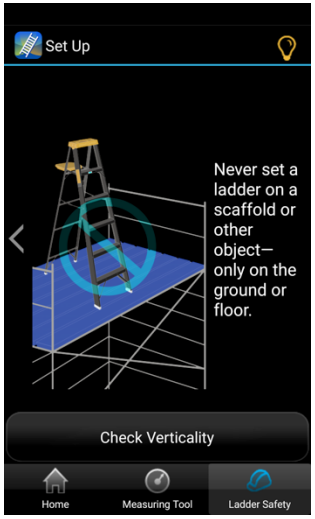
4: Step Ladder-Set Up (cont'd)





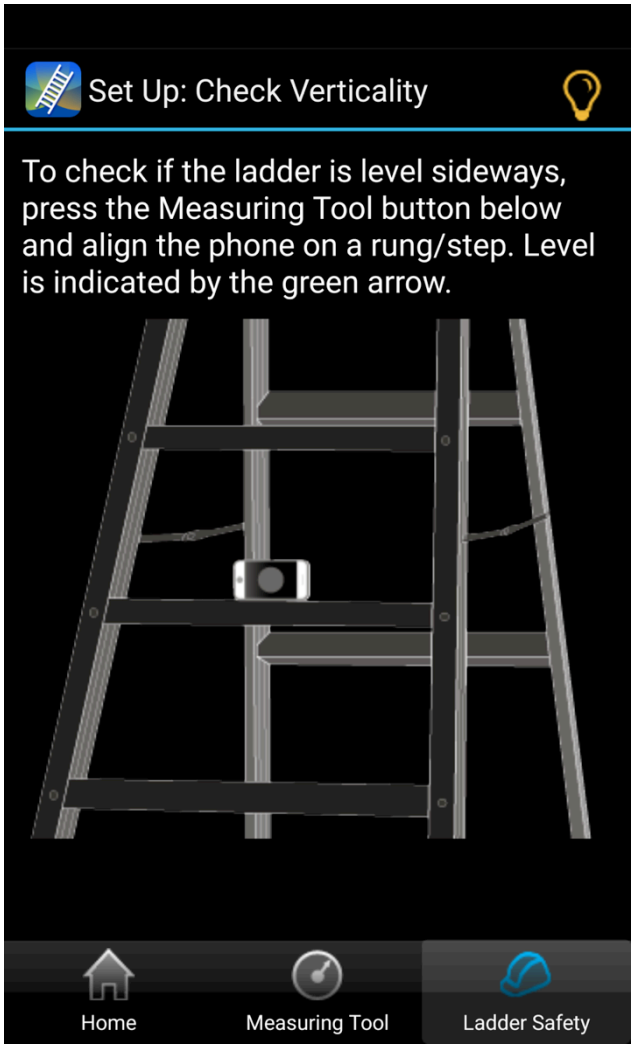






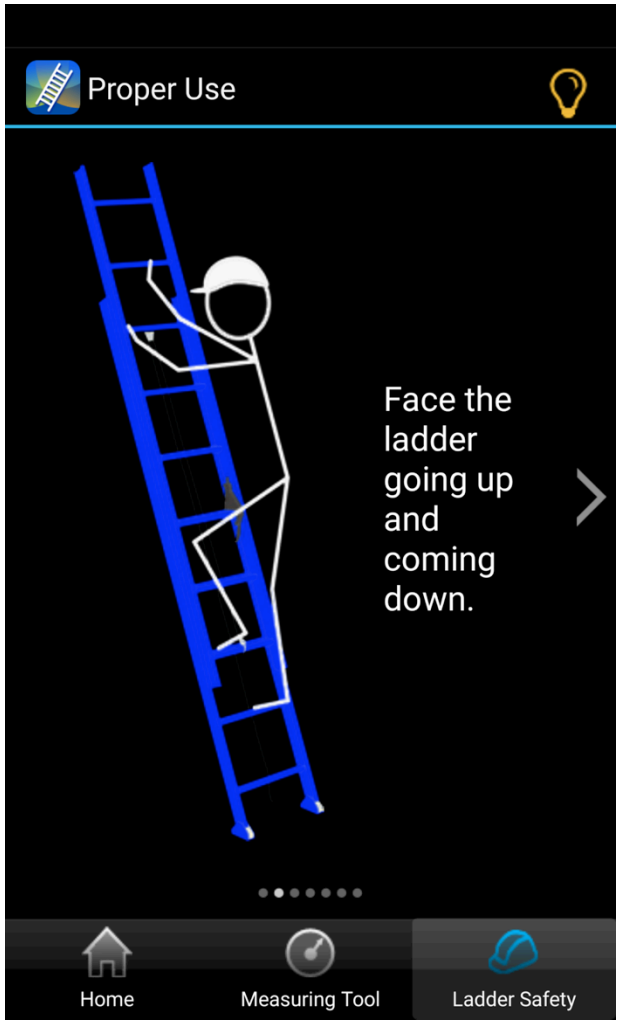
National Institute for Occupational Safety and Health
NIOSH

4: Step Ladder-Set Up (cont'd)



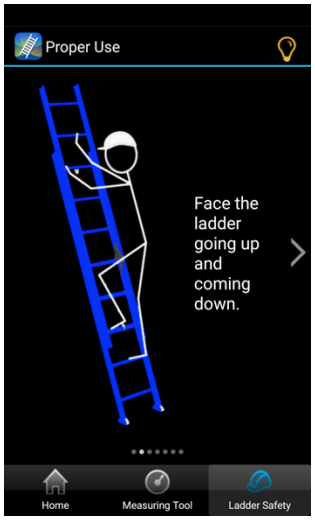
The text as it appears on the screen.

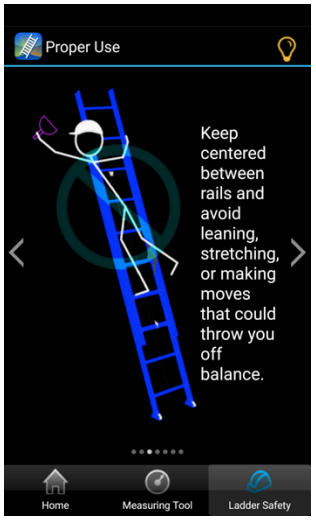
5: Extension Ladder-Proper Use

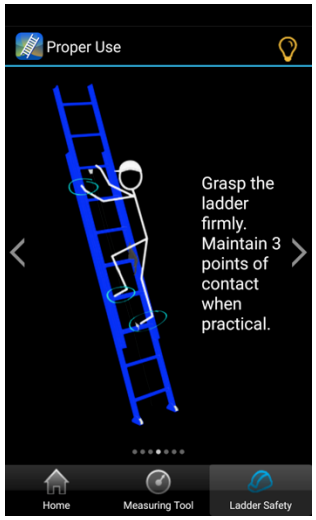


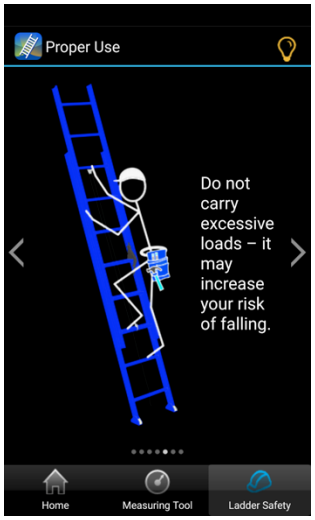
For all Proper Use screens, the instructions read aloud is the same as the text.

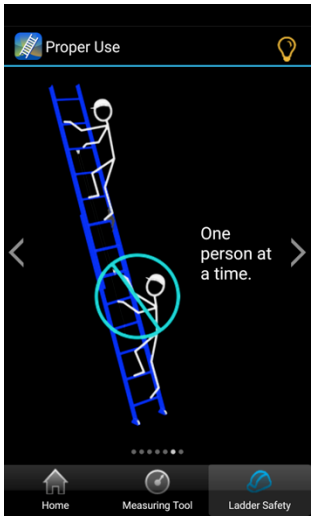
5: Extension Ladder-Proper Use (cont'd)

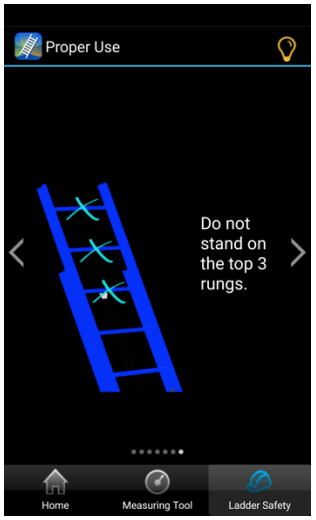


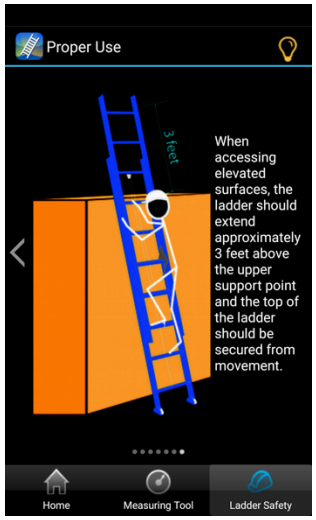










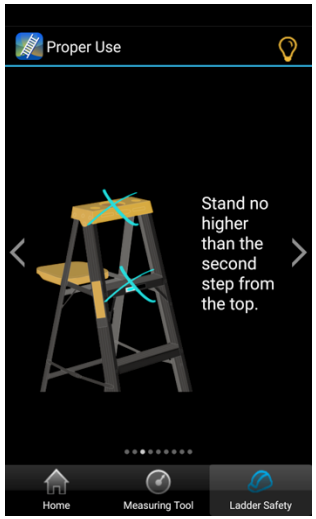


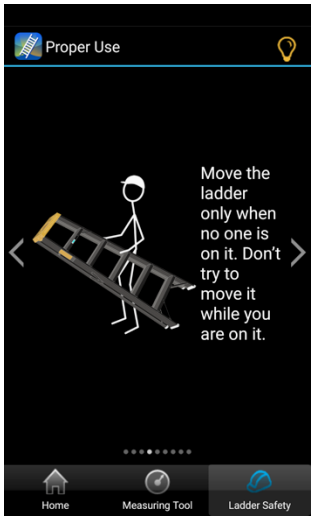
National Institute for Occupational Safety and Health
NIOSH

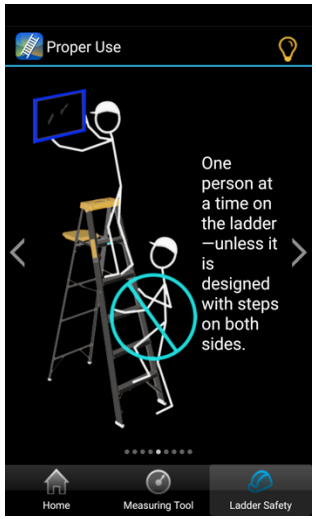
5: Step Ladder-Proper Use

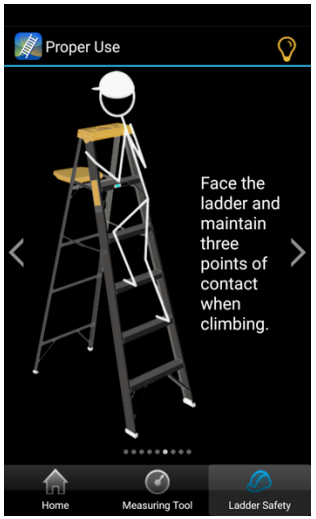
For all Proper Use screens, the instructions read aloud is the same as the text.

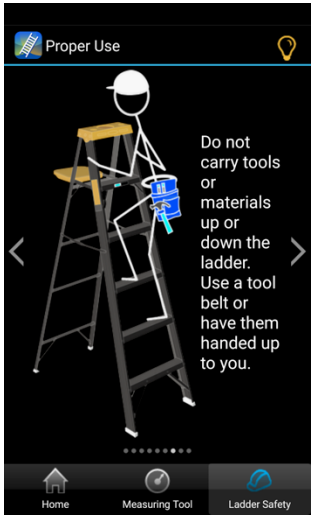
5: Step Ladder-Proper Use

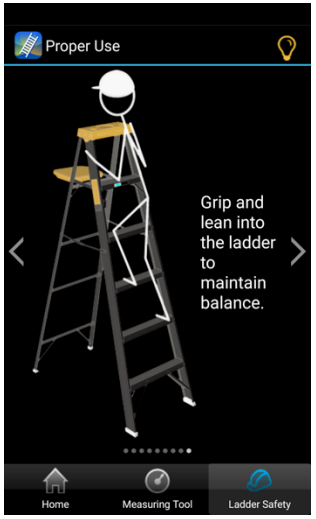






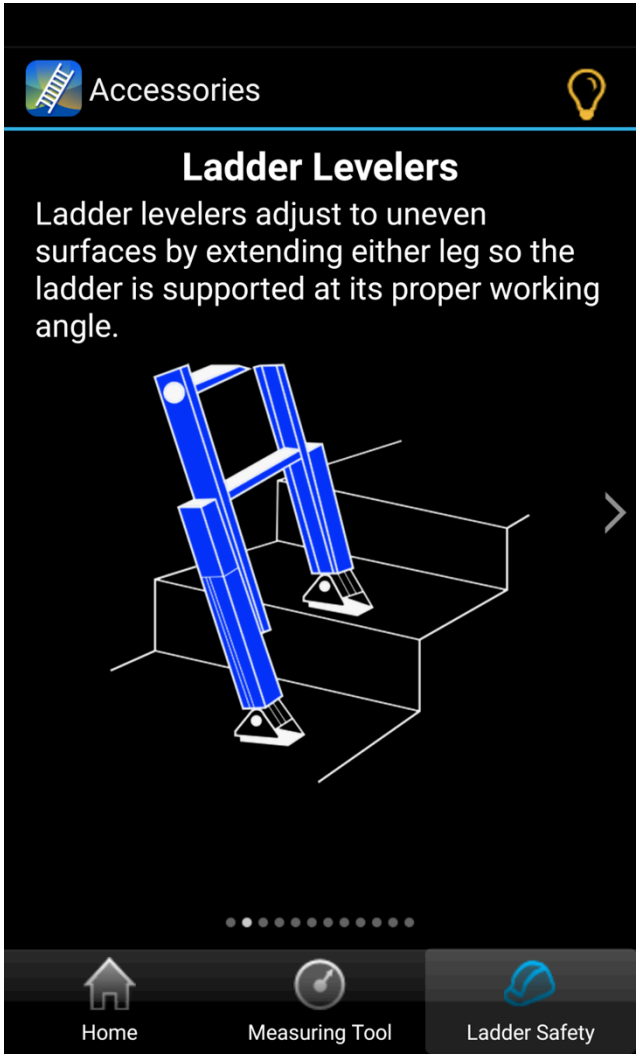






National Institute for Occupational Safety and Health
NIOSH

6: Extension Ladder-Accessories

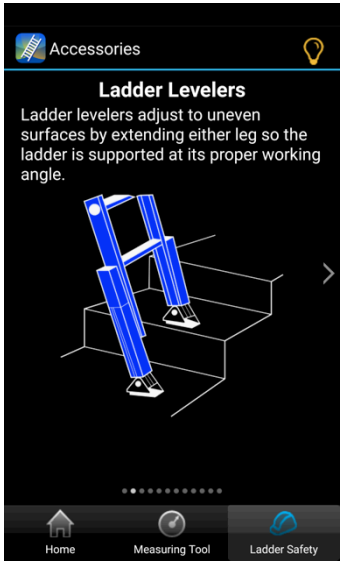


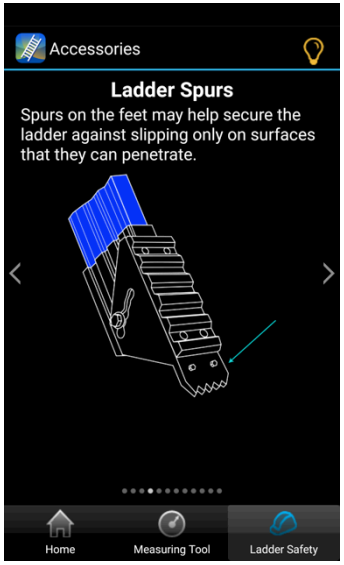
For all accessories images, the text read aloud will be the same as the caption.

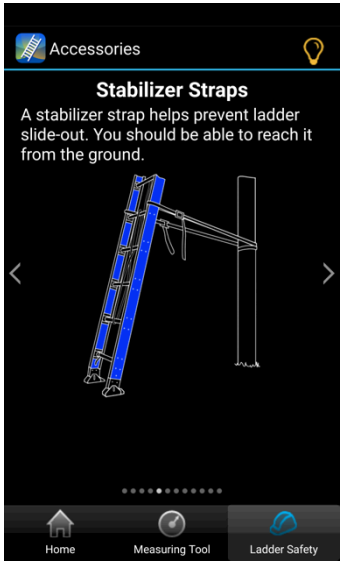
For every accessories description, the text read aloud will be the same as the text that is on the screen.

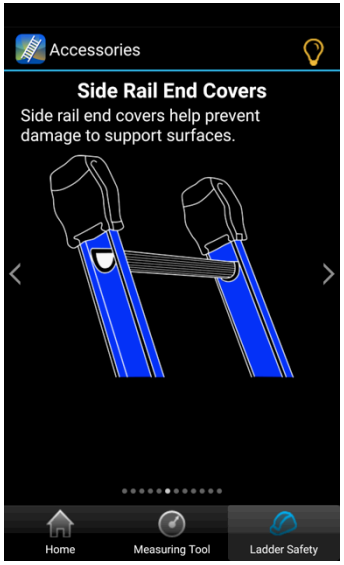
National Institute for Occupational Safety and Health NIOSH

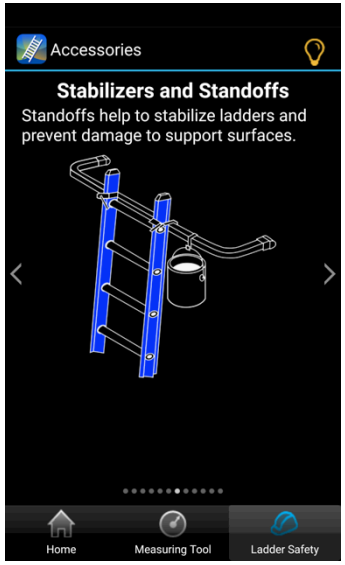
6: Extension Ladder-Accessories (cont'd)

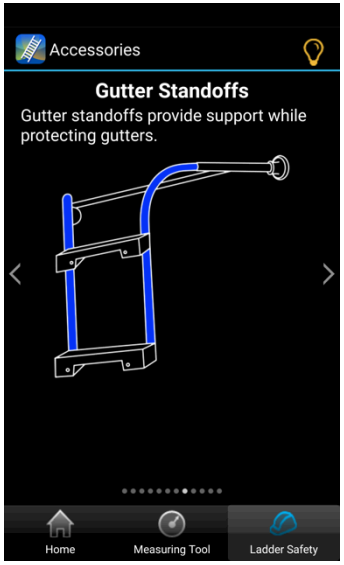


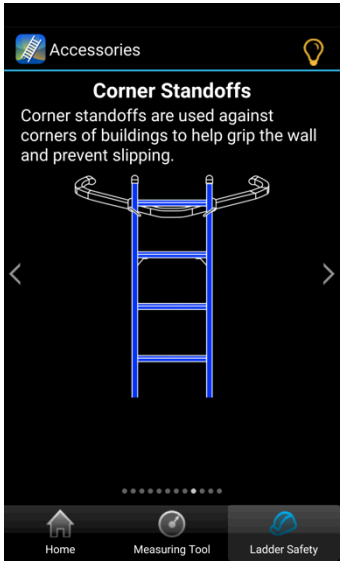






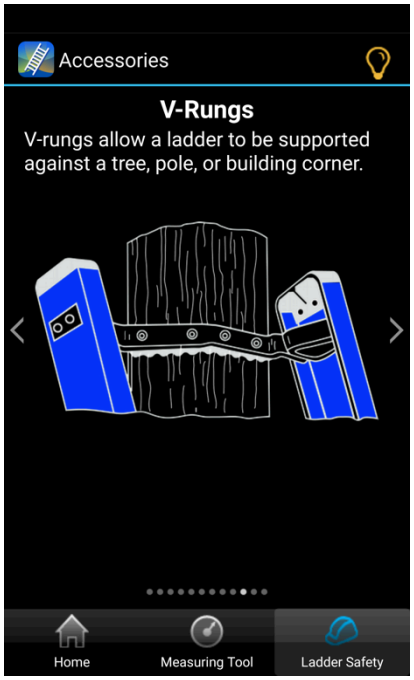


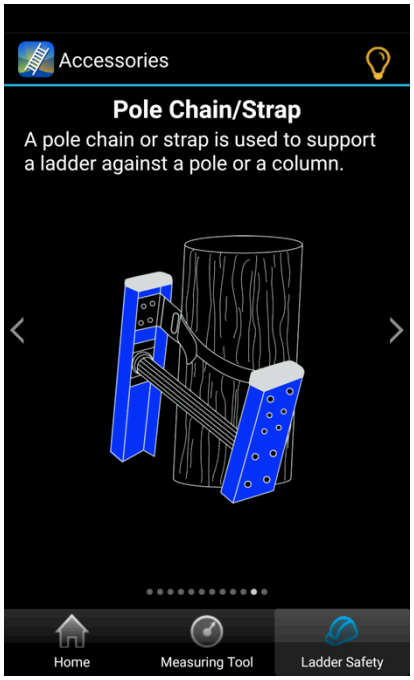


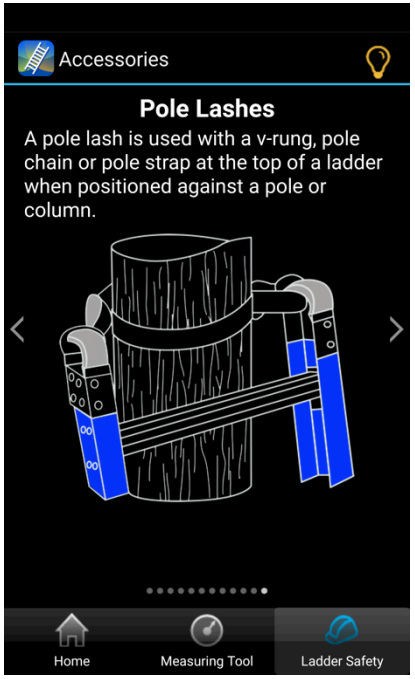


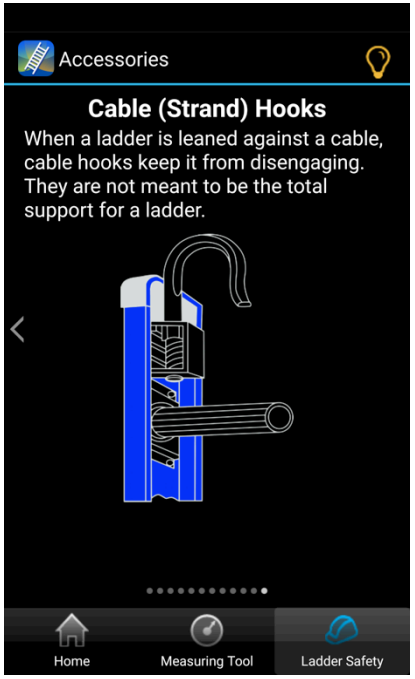
National Institute for Occupational Safety and Health
NIOSH

6: Extension Ladder-Accessories (cont'd)



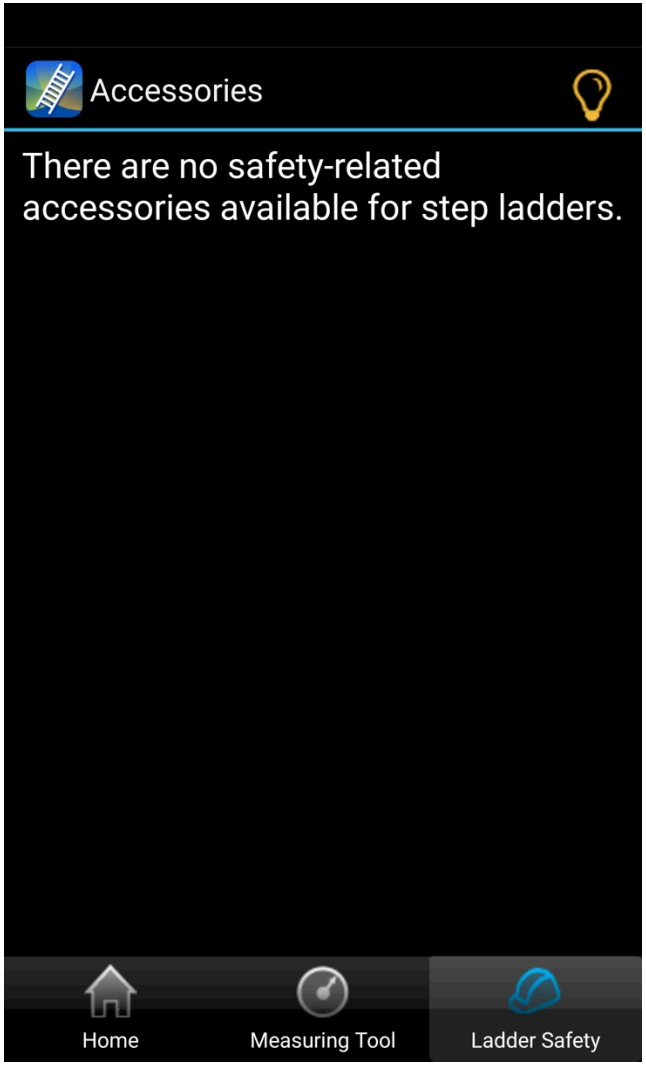






National Institute for Occupational Safety and Health
NIOSH

6: Step Ladder-Accessories



"There are no safety- related accessories available for step ladders."

National Institute for Occupational Safety and Health
NIOSH

End-User License Agreement

END-USER LICENSE AGREEMENT (EULA) for the Division of Safety Research, National Institute for Occupational Safety and Health (NIOSH) Ladder Safety application for iOS and Android mobile devices.

IMPORTANT PLEASE READ THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT CAREFULLY BEFORE CONTINUING WITH THIS PROGRAM INSTALL: CDC NIOSH Ladder Safety End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and NIOSH for the NIOSH software product(s) identified above which may include associated software components, media, printed materials, and "online" or electronic documentation (“Ladder Safety"). By installing, copying, or otherwise using the Ladder Safety application program, you agree to be bound by the terms of this EULA. This license agreement represents the entire agreement concerning the program between you and NIOSH, (referred to as "licenser"), and it supersedes any prior proposal, representation, or understanding between the parties. If you do not agree to the terms of this EULA, do not install or use the Ladder Safety program.

The Ladder Safety application is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The NIOSH Ladder Safety application is licensed, not sold.

1. GRANT OF LICENSE.

Ladder Safety is licensed as follows:

(a) Installation and Use.

CDC NIOSH grants you the right to install and use copies of Ladder Safety on your mobile device running a validly licensed copy of the operating system for which Ladder Safety was designed [e.g., Android, iOS].

2. DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS.

(a) Maintenance of Copyright Notices. You must not remove or alter any copyright notices on any and all copies of Ladder Safety.

(b) Distribution. You may not distribute registered copies of Ladder Safety to third parties.

(c) Prohibition on Reverse Engineering, Decompilation, and Disassembly. You may not reverse engineer, decompile, or disassemble Ladder Safety, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.

(d) Rental. You may not rent, lease, or lend Ladder Safety.

(e) Support Services. CDC NIOSH may provide you with support services related to Ladder Safety ("Support Services"). Any supplemental software code provided to you as part of the Support Services shall be considered part of Ladder Safety and subject to the terms and conditions of this EULA.

(f) Compliance with Applicable Laws. You must comply with all applicable laws regarding use of Ladder Safety.

National Institute for Occupational Safety and Health NIOSH

End-User License Agreement (cont'd)

3. TERMINATION

Without prejudice to any other rights, NIOSH may terminate this EULA if you fail to comply with the terms and conditions of this EULA. In such event, you must destroy all copies of Ladder Safety in your possession.

4. COPYRIGHT

All title, including but not limited to copyrights, in and to Ladder Safety and any copies thereof are owned by NIOSH or its supplier, DSFederal, Inc. All title and intellectual property rights in and to the content which may be accessed through use of Ladder Safety is the property of the respective content owner and may be protected by applicable copyright or other intellectual property laws and treaties. This EULA grants you no rights to use such content. All rights not expressly granted are reserved by NIOSH.

5. NO WARRANTIES

NIOSH expressly disclaims any warranty for Ladder Safety. Ladder Safety is provided 'As Is' without any express or implied warranty of any kind, including but not limited to any warranties of merchantability, non-infringement, or fitness of a particular purpose. NIOSH does not warrant or guarantee the ability of this app to function properly with any particular smartphone and/or internal operating system thereto. NIOSH does not warrant or assume responsibility for the accuracy or completeness of any information, text, graphics, links or other items contained within Ladder Safety. NIOSH makes no warranties respecting any harm that may be caused by the transmission of a computer virus, worm, time bomb, logic bomb, or other such computer program. NIOSH further expressly disclaims any warranty or representation to Authorized Users or to any third party.

6. LIMITATION OF LIABILITY

In no event shall NIOSH be liable for any damages (including, without limitation, lost profits, business interruption, or lost information) rising out of 'Authorized Users' use of or inability to use Ladder Safety, even if NIOSH has been advised of the possibility of such damages. In no event will NIOSH be liable for loss of data or for indirect, special, incidental, consequential (including lost profit), or other damages based in contract, tort or otherwise. NIOSH shall have no liability with respect to the content of Ladder Safety or any part thereof, including but not limited to errors or omissions contained therein, libel, infringements of rights of publicity, privacy, trademark rights, business interruption, personal injury, loss of privacy, moral rights or the disclosure of confidential information.

National Institute for Occupational Safety and Health
NIOSH