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Slips, Trips and Falls

The #1 cause of injury in the workplace

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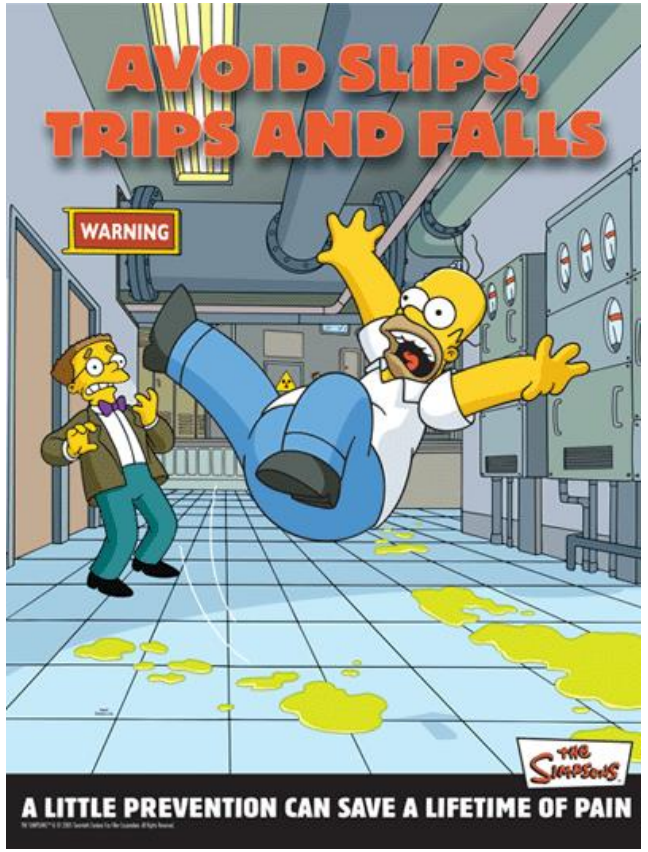
Slips, Trips and Falls

- The number one sustained injury in a workplace
- The second leading cause of fatality among workers



* According to the Bureau of Labor Statistics

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Surface Falls

- **Trip and Fall** – when there is an unseen object in a workers path that might cause them to strike their foot against, resulting in a fall
- **Stump and Fall** – when there is an unexpected sticky surface in the walking path of the worker that causes the foot to become stuck to the floor resulting in a fall
- **Step and Fall** – when there is an unexpected step down or the step down is farther than anticipated resulting in a fall
- **Slip and Fall** – when the worker's center of gravity is unexpectedly thrown out of balance such as when they step on an oily patch resulting in a fall

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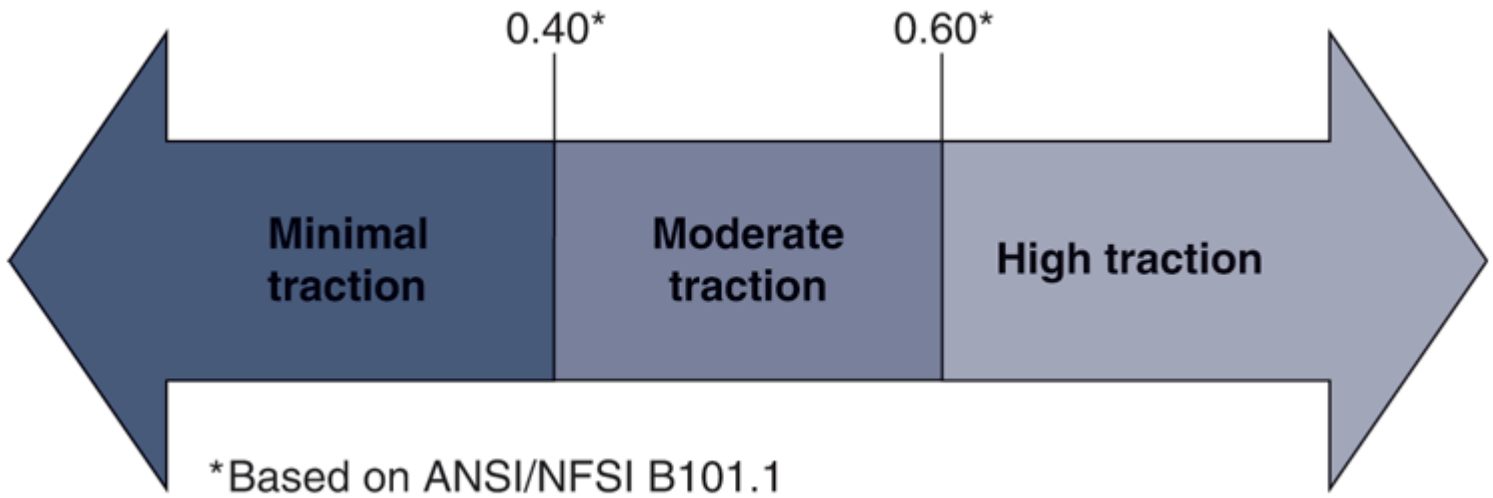
Traction

- One of the major ways to decrease slips and falls is to increase traction on the walking surface
- ANSI defines traction as anything with less than 0.4 coefficient of friction as minimal traction and anything with 0.6 or more as high traction when wet



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Factors that Decrease Traction

- Unclean floors
  - Floors with spilled oil, soaps, grease or even just water
- Flooring with minimal or no texture
- Wet floors
- Shoes with bad soles or worn out soles

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General Strategies for Preventing Slips

- Good Hygiene Practices
  - Clean up oils, soaps and other slippery substances immediately after they spill and post signage
- Choose the right material when installing new walkways
  - Choose materials that have high coefficients of friction
- Install material on existing walkways to improve traction
  - Install runners, skid strips, carpet, groves, abrasive coatings, grills or textured coverings on existing surfaces that would be to difficult or costly to replace
- Require non-slip footwear
  - Part of a workers PPE should be boots or shoes with good traction
- Inspect surfaces for wear and tear that might cause them to become smooth
  - Some surfaces can become smooth over time, it is important to inspect these surfaces and install safety material when a hazard is identified

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Falling from Height

- Fall protection can come in a few shapes and forms
  - Guardrails
  - Harnesses and PPE
  - Coverings for fall hazards
  - Netting and cages

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OSHA Guidelines on Fall Protection

- General industry Standard
  - 1910.23 Guarding Floor and Wall Openings and Holes
  - 1910.25 Portable Wooden Ladders
  - 1910.26 Portable Metal Ladders
  - 1910.27 Fixed Ladders
  - 1910.28 Scaffolding
  - 1910.66 Powered Platforms for Maintenance
  - 1910.67 Aerial Lifts
  - 1910.68 Manlifts
  - 1910.132 Personal Protective Equipment
  - 1910.269 Electric Power Generation, Transmission and Distribution

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Knowledge Check 1

Above what value is considered “good traction”

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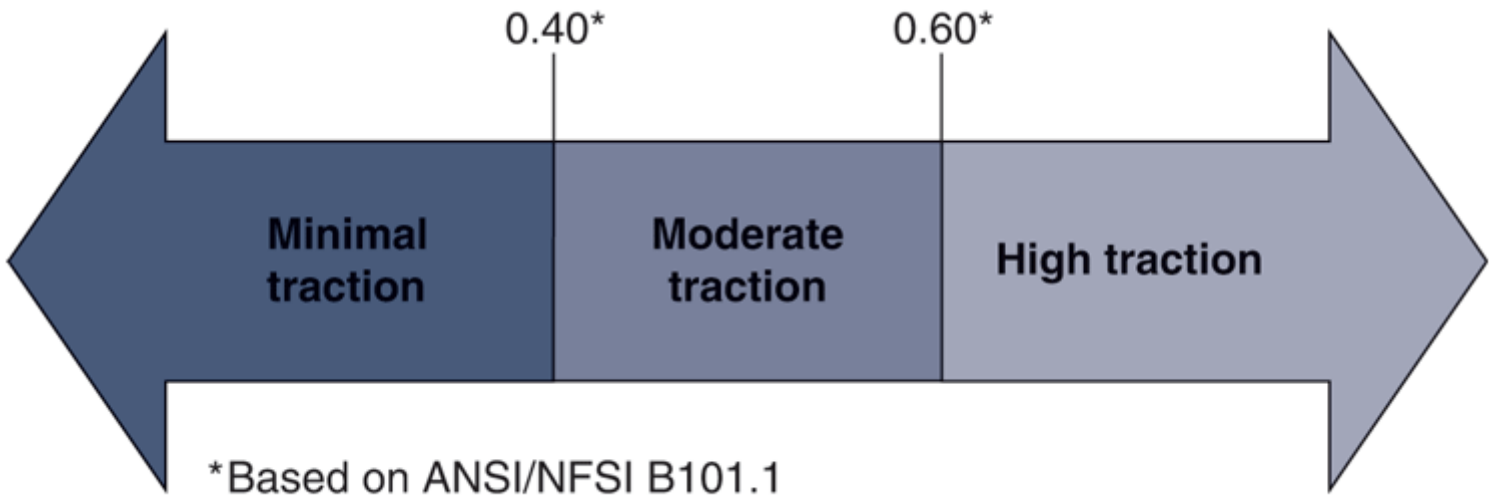
Knowledge Check 1

Any value above 0.6 coefficient of friction is considered to have high traction



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In general…

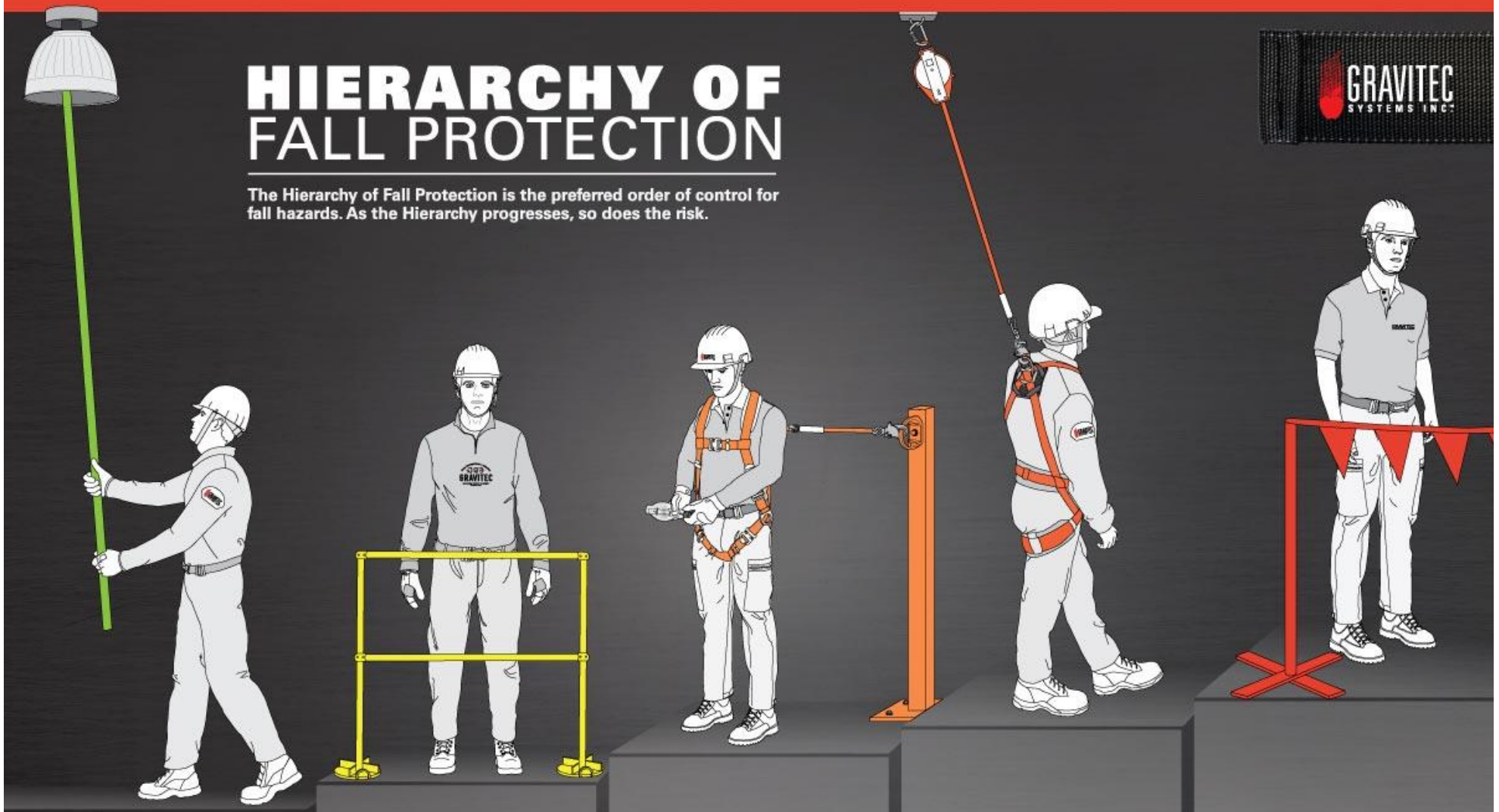
Fall protection should be established around

1. Floor holes using a guardrail and toe-board
2. Open sided platforms (catwalks or lifts) that are more than 4 feet off the ground
3. Vats, conveyer belts, machines etc. to prevent workers from falling into them accidentality

HIERARCHY OF FALL PROTECTION

GRAVITEC SYSTEMS INC

The Hierarchy of Fall Protection is the preferred order of control for fall hazards. As the Hierarchy progresses, so does the risk.



1 HAZARD ELIMINATION

Preferred solution is to eliminate exposure to the fall hazard.

2 PASSIVE FALL PROTECTION

Physical barriers, like guardrails around unprotected edges and covers over holes.

3 FALL RESTRAINT SYSTEMS

Use personal protective equipment to restrict the worker's range of movement so they cannot fall.

*Training required

4 FALL ARREST SYSTEMS

Use personal protective equipment to arrest a fall within acceptable force and clearance margins.

*Training and rescue planing required

5 ADMINISTRATIVE CONTROLS

Least preferred solution is work practices or procedures that increase a worker's awareness of a fall hazard.

* Not recommended

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Fall Protection Guidelines

- For general industry, fall protection should be established any time that a worker is more than **4 feet** above the ground
- For shipyards its is **5 feet**
- For construction it is **6 feet**
- For scaffolding work it is **10 feet**
- For fixed ladders it is **24 feet**

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Employers should…

1. Provide fall protection in the form of harnesses and lines, netting, safety railings and/ or handrails
2. Provide a work environment that is protected against dangers (i.e putting up guardrails and covers for holes)
3. Keep floors clean and sanitary
4. Provide fall protection PPE at no cost the employee
5. Train workers in the hazards they may encounter and in the use of their PPE

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Testing Fall Protection Equipment

- ANSI/ASSE Z359.1 and Z359.7 Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

- Fall protection equipment should be tested in an ISO 17025 laboratory and a ASNI standard mark should be provided by the laboratory upon request

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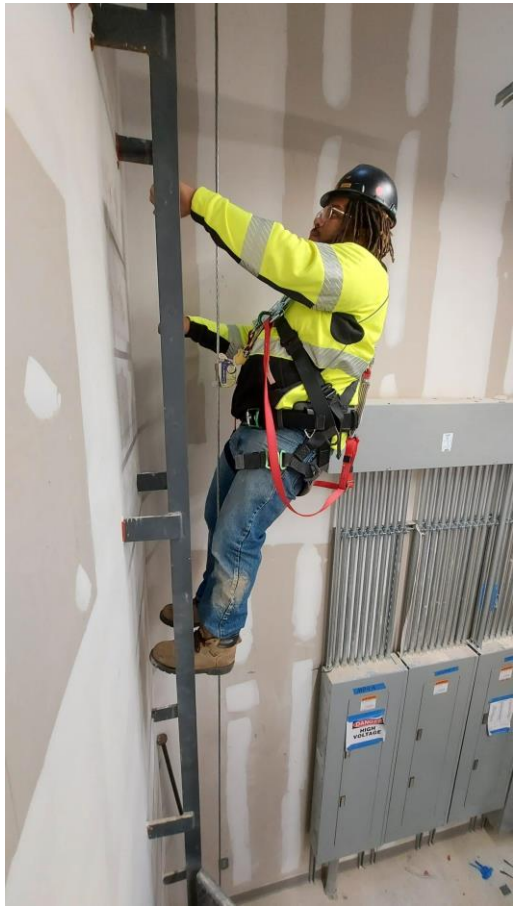
Fall Protection

- When wearing fall protection, the maximum free fall distance should only be 6 feet



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Fall Protection Emergency

- As with any emergency call 911 or local emergency services
- Dangling from fall protection can cause “Suspension Trauma” or “harness hang syndrome”
- Occurs after a fall has been arrested by fall protection equipment
- The leg straps of a fall harness crush the femoral arteries inside the legs cutting off circulation and oxygen delivery to the lungs. This can be fatal in as little as 30 minutes from the fall
  - Trauma straps are a type of PPE to help prevent this type of injury (require deployment and the person might not be conscious)
- It is important to have a rescue plan in place before it is needed to rescue a worker who has fallen

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OSHA Recommendations for Fall Protection

- Have a Plan
  - Employers should develop a written plan for using fall protection
- Establish proper fall protection requirements
  - Write rules and regulations for employees when they are working
- Provide proper fall protection equipment and procedures and require their use
  - PPE and engineering controls such as fall arrest systems and guardrails
- Ensure fall protection device replacement
  - Fall protection should be inspected and replaced frequently regardless of obvious wear
- Ensure proper use and type of equipment
  - PPE for fall protection should fit correctly and be worn the correct way. Anchor points should also be used properly
- Provide training
  - Training on identifying fall hazards as well as proper use and care of PPE should be part of the training plan

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Knowledge Check 2

- What is the maximum free fall distance that employees should be exposed to when wearing fall protection?

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Knowledge Check 2

- 6 ft is the maximum free fall distance when hooked into fall protection as required by OSHA

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Aerial Lifts

OSHA 1926.453 Aerial Lifts

- Employees should always stand firmly on the platform of the basket and shall not climb or sit on the edge of the basket or railings
- The aerial lift shall not be moved while the boom is elevated or in a working position with men in the basket
- Only authorized personnel shall operate or use an aerial lift
- A belt and lanyard shall be worn and a lanyard attached to the boom or basket when working in an aerial lift

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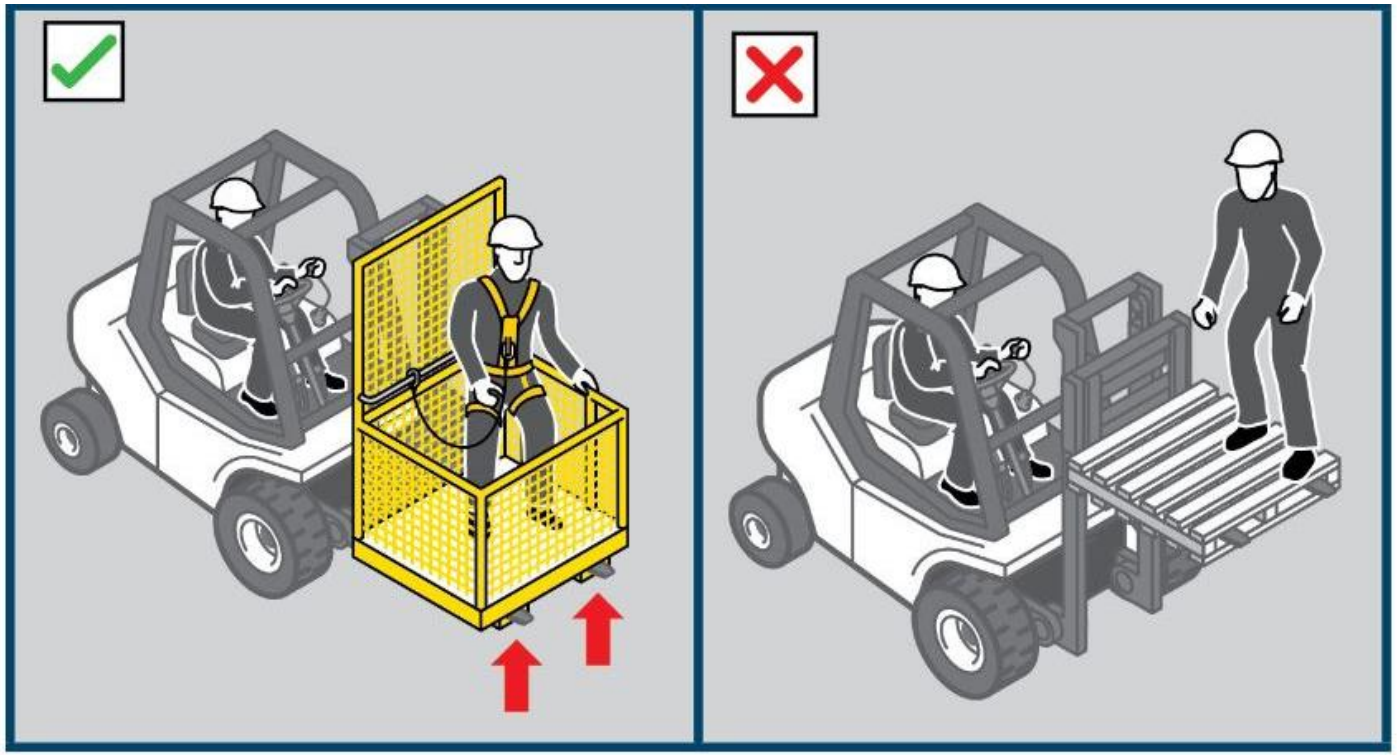
Lifts

- Do NOT try to use a fork lift as a man lift without the proper safety equipment (they make baskets for this, don't try to use a pallet or just stand on the forks)



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Ladder Safety

- Inspect your ladder before use
  - Read the label to find out weight capacity and application
  - Check for slippery rungs
  - Look for damage
    - Heat damage, cracks, corrosion, sharp edges, loose rungs

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Choosing the Right Ladder

- You want to check the duty rating of the ladder for capacity requirements (how much weight can it hold?)
- Pick the right height ladder for your job. You should never use the top two rungs for standing
- Use the right material of ladder (do not use a metal ladder for electrical work)

TYPE	DUTY RATING	USE	LOAD
1AA	Special Heavy Duty	Rugged	375 Lbs.
1A	Extra Heavy Duty	Industrial	300 Lbs.
1	Heavy Duty	Industrial	250 Lbs.
II	Medium Duty	Commercial	225 Lbs.
III	Light Duty	Household	200 Lbs.

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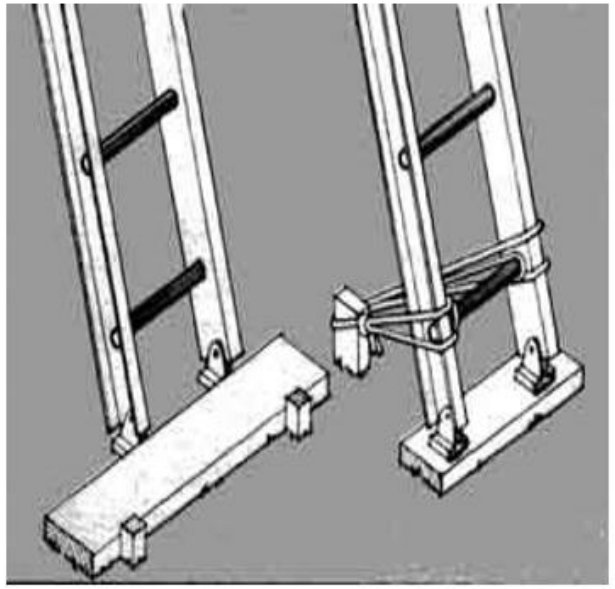
Extension Ladders

- When using an extension ladder to get up on a platform, the ladder must extend at least another 3 ft above the landing
- They should be secured at the top and bottom to prevent slipping



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Step Ladders

- When using a step ladder, do not use the opposite side of the ladder to increase reach
- They must always be used in the open and locked positions
- Use a step ladder that is no more than 4 ft shorter than the point you want to reach

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The 4 to 1 Rule

- Apply the **four-to-one ratio** when setting up your ladder (the ladders base should be one foot away from the support for every four feet of height

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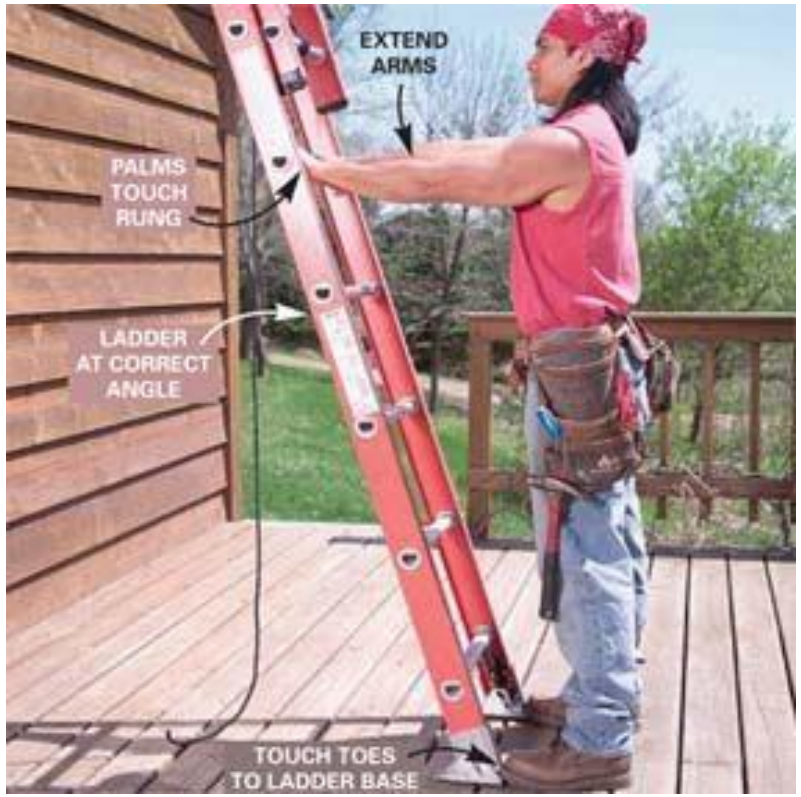
The DO's of Ladder Safety

- Secure the top and bottom of the ladder
- Set the ladder on a level, sturdy surface
- Climb up and down the ladder facing the ladder
- When working near an entrance, barricade the base of the ladder so a door cannot knock it over
- Stop and move the ladder instead of reaching to the side
- Always keep three points of contact with the ladder
- Use the 4 to 1 rule



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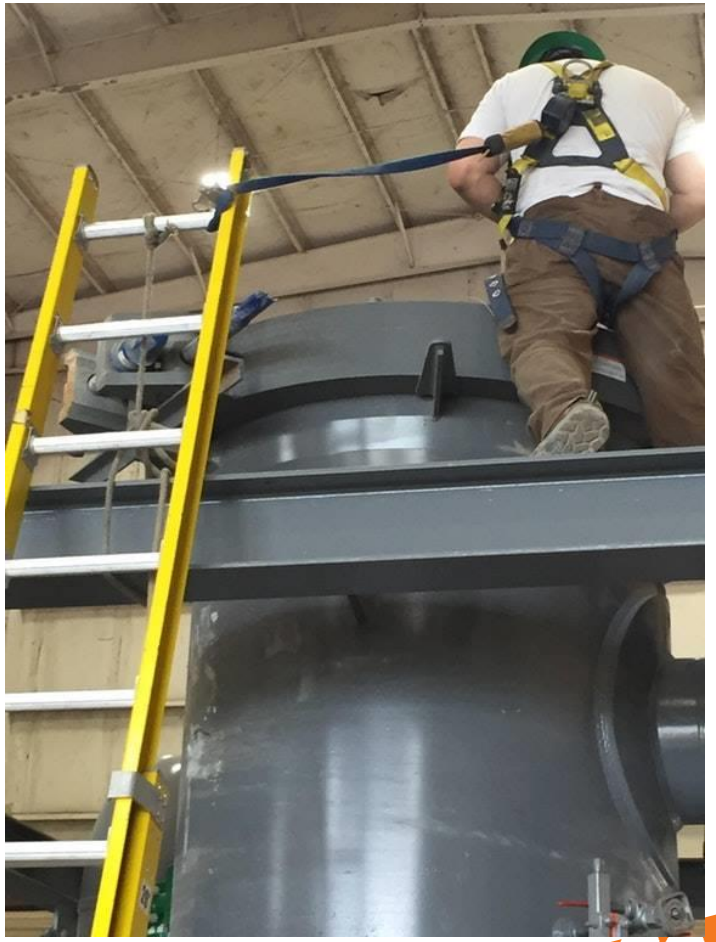
The DON'Ts of Ladder Safety

- Don't lean your ladder against a fragile, slippery or unstable surface
- Don't lean to far to the sides when working on a ladder (move the ladder instead)
- Don't set up the base of your ladder on an unstable surface to make it reach higher
- Don't allow more than one person on the ladder at a time
- Don't allow your waist to go higher than the last rung when reaching upward
    - Don't allow your feet to use the last rung



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NO


NO
NOPE


Absolutely Not


This is NOT safe

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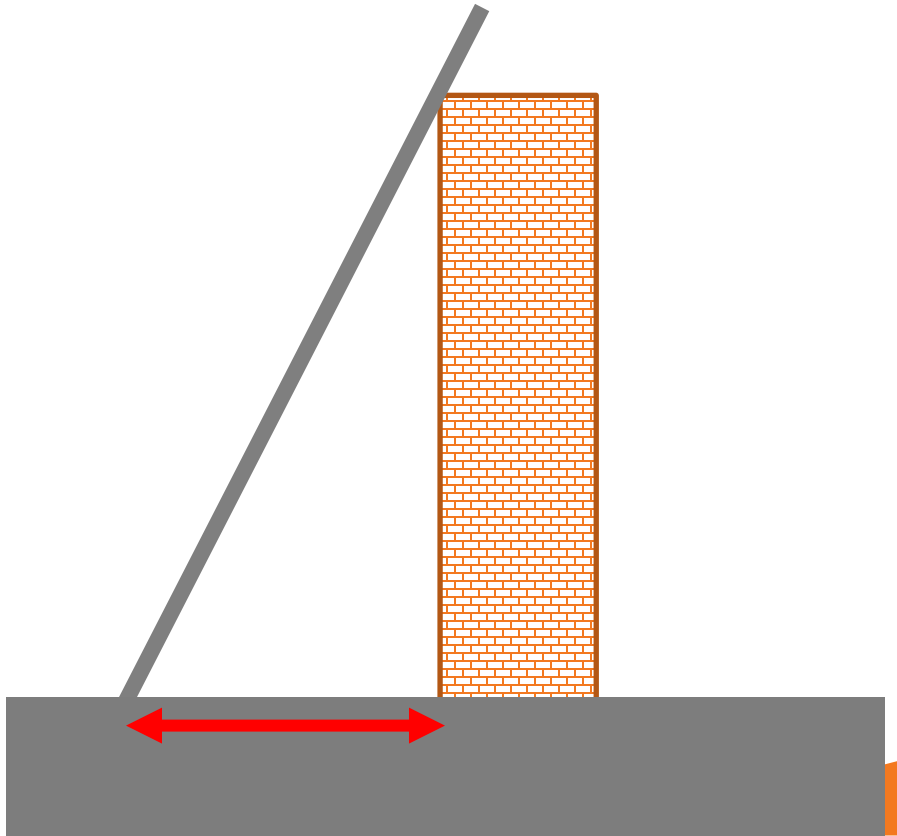
Knowledge Check 3

- If you have a 16 ft ladder and plan on using it fully extended, how far away from the wall does the base of the ladder need to be?



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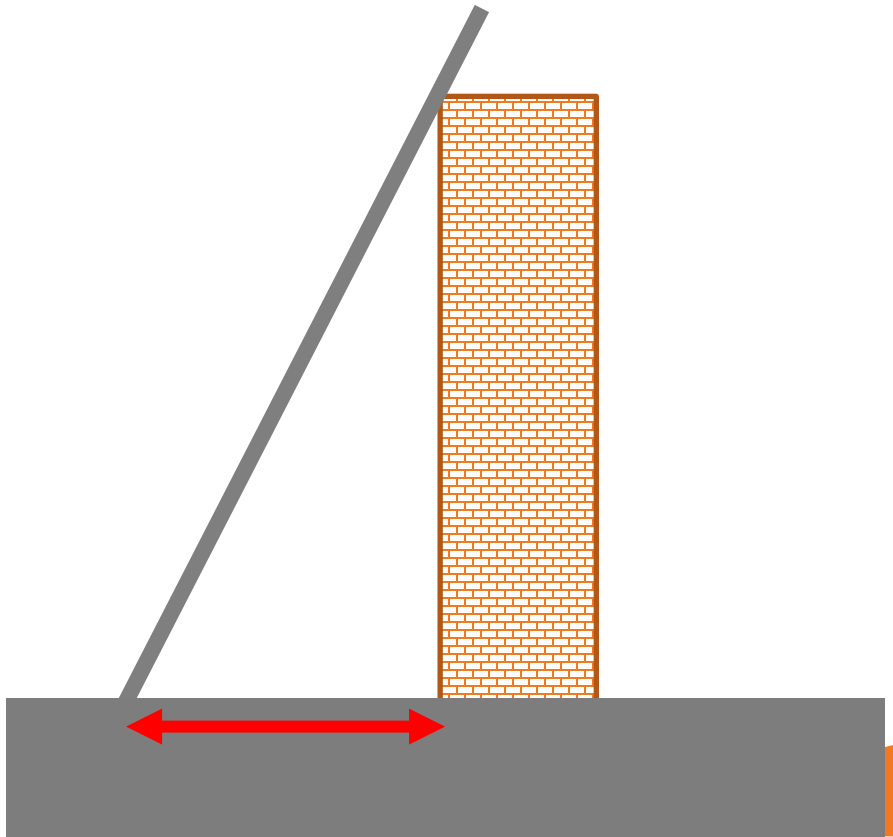
Knowledge Check 3

The ladder would need to be 4 ft away from the base of the wall

$$\frac{16}{4} = 4\text{ft}$$



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Remember

1. Never work alone on a ladder
2. Wear your head protection while working at height to prevent head injury
3. Be aware of overhead obstacles when moving your ladder
   - This is especially true for metal ladders and overhead powerlines

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End of Show

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