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# Terminal High Altitude Area Defense (THAAD)

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# Terminal High Altitude Area Defense (THAAD)

This lesson explains THAAD, the American anti-missile system that keeps appearing in the news. Exams ask one simple thing: whose system is it? The answer is American. The lesson also sorts out the look-alikes, Israel's Arrow and India's AD-1. Pages were read on 9 October 2026.

> **Name**Terminal High Altitude Area Defense, a land-based anti-ballistic-missile element of the US Missile Defense System.
>
> **Method**hit-to-kill. The interceptor destroys the warhead by hitting it (US Missile Defense Agency).
>
> **Builder**Lockheed Martin developed it. The US Army operates it.
>
> **Exam link**UPSC CSP 2018 Q43 asked what THAAD is. The answer is an American anti-missile system.

## What must I know about THAAD?

### 1 What is THAAD?

THAAD is a missile-defence system owned by the United States. This card explains its name and its job.

### What does the name mean?

THAAD stands for Terminal High Altitude Area Defense. "Terminal" means the final phase of a missile's flight. "High altitude" means it can strike inside or outside the atmosphere.

## Whose system is it?

It is an American system. The US Missile Defense Agency calls it a land-based element of the Missile Defense System.

Lockheed Martin developed it. The US Army began developing it in 1992.



A THAAD interceptor launches during a 2005 test. Photo: US Missile Defense Agency, via Wikimedia Commons, Public domain. Resized from the original.

## What is its job?

THAAD destroys ballistic missiles during their final, or terminal, phase of flight. It can be moved by air, land and sea.

Terminal
Final phase of the missile flight

High Altitude
Inside or outside the atmosphere

Area Defense
Defends a larger area than Patriot

Illustration: From the Missile Defense Agency and the Congressional Research Service.

**Quick check 1.** THAAD is an Israeli radar system. *(True or False?)* See answer ↓

Sources: mda.mil; congress.gov

## 2 How does THAAD stop a missile?

THAAD does not use an explosive blast. It uses a direct hit. This card follows an interception step by step.

### What is hit-to-kill?

THAAD uses hit-to-kill technology. The kinetic energy of the impact destroys the incoming warhead.

## Who finds the target?

A radar searches, tracks and discriminates objects. It passes tracking data to the interceptor.

## Who plans the shot?

The fire control unit links all the parts together. It plans and executes the intercept solutions.

## How far can it reach?

The Congressional Research Service says THAAD can reportedly engage targets 150 to 200 km away.

## Why intercept so high?

The high-altitude intercept reduces the effects of enemy weapons of mass destruction. The missile is stopped before it reaches the ground.

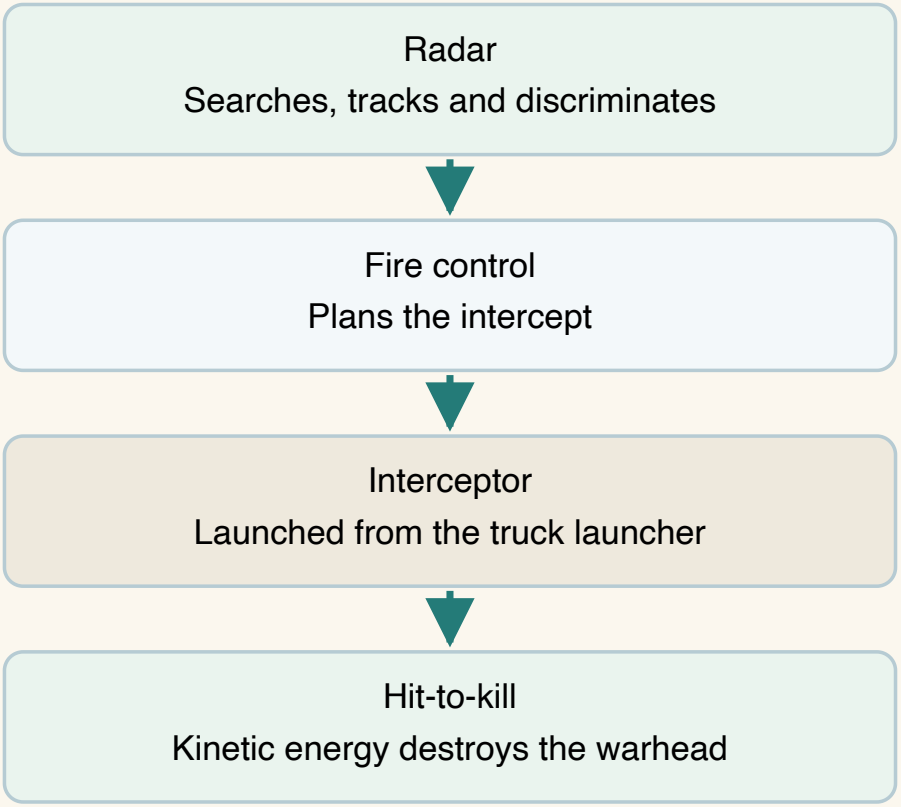



Illustration: Steps as described by the Missile Defense Agency.

> **Quick check 2.** THAAD destroys a warhead with an explosive blast near it. *(True or False?)* See answer ↓

Sources: mda.mil; congress.gov

## 3 What is in a THAAD battery?

A THAAD battery is a team of four main parts. This card names them.

## What are the four parts?

- **Launcher:** a truck-mounted, highly mobile launcher. Interceptors can be fired and rapidly reloaded.
- **Interceptors:** up to eight per launcher.
- **Radar:** the AN/TPY-2. The Missile Defense Agency calls it the largest air-transportable X-band radar in the world.
- **Fire control:** the communications and data backbone of the battery.

## Is there an extra launcher type?

THAAD can add Missile Segment Enhancement launchers, if the US Army directs it. They give more engagement opportunities and save THAAD interceptors.



A THAAD interceptor leaves its truck-mounted launcher in a test launch. Image from the Missile Defense Agency, shown via Wikimedia Commons, Public domain. Resized from the original.

## How big is a battery?

The Congressional Research Service describes a battery of 90 soldiers, 6 launchers and 48 interceptors. The Missile Defense Agency fact sheet says a battery can have up to 9 launchers.

So the number of launchers is not fixed. Treat it as a range.

THAAD battery

Launcher: truck-mounted

Interceptors: up to 8 per launcher

Radar: AN/TPY-2

Fire control

Illustration: From the Missile Defense Agency.

> **Quick check 3.** A THAAD launcher carries up to eight interceptors. *(True or False?)* See answer ↓

Sources: mda.mil; congress.gov

## 4 Who builds, runs and tests THAAD?

Three organisations share the work. This card also gives the testing record.

### Who does what?

The Missile Defense Agency is responsible for development. The US Army provides the soldiers and runs the common items.

Lockheed Martin developed THAAD. It is manufactured in Troy, Alabama.

## How did the tests go?

The first intercept test, in December 1995, failed. Five more test flights from 1996 to 1999 also failed.

The Army then redesigned THAAD. From 2006 to 2019 it ran 18 intercept tests. Fourteen succeeded and four were cancelled before launch because of target malfunctions.

The Missile Defense Agency counts differently. It says THAAD has completed 17 successful intercepts in 17 attempts since the programme began.

## How many batteries exist?

The first battery was activated in May 2008 at Fort Bliss, Texas. The Army has eight batteries, says the September 2025 update of the Congressional Research Service report.

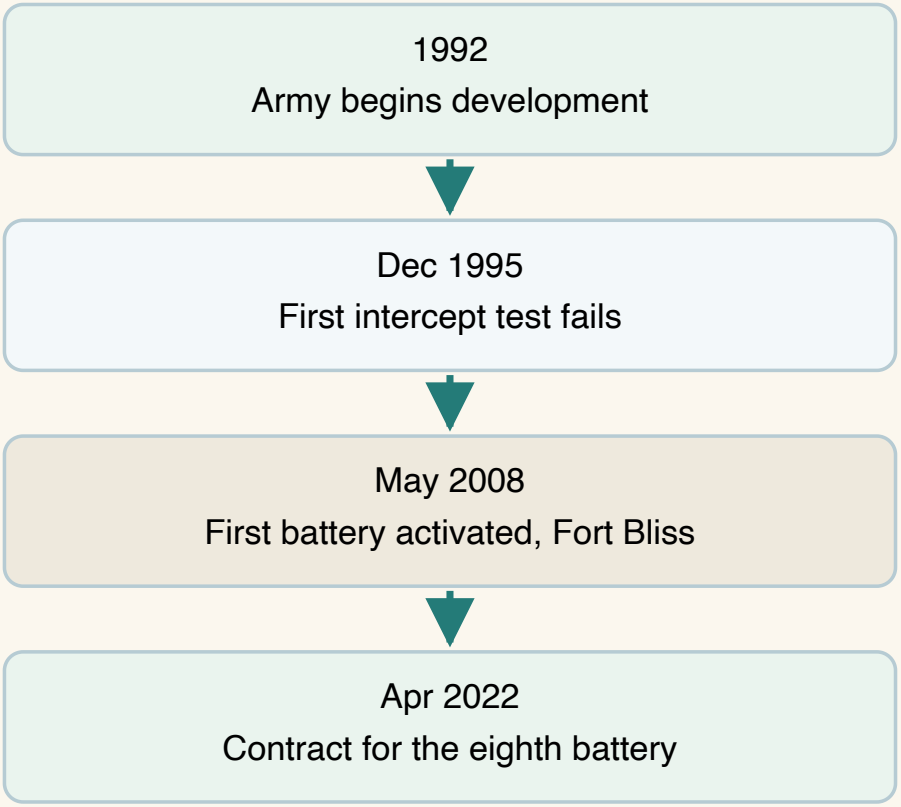



Illustration: Dates from the Congressional Research Service.

Sources: congress.gov; mda.mil

## What is good to know about where THAAD goes?

### 5 Where has THAAD been deployed?

THAAD travels. Its location on any day is news, but its owner never changes. This card lists the main moves.

## What happened in Guam and South Korea?

In April 2013 the US Defense Secretary sent a battery to Guam on an emergency basis. The reason was possible North Korean missile launches. The Defense Department later validated an enduring need for a battery in Guam.

On 7 July 2016 the US and South Korean governments decided to deploy a battery in South Korea. It is stationed at Seongju, about 130 miles south of Seoul.

## What about Romania and the UAE?

In April 2019 THAAD was temporarily deployed to Deveselu, Romania.

The United Arab Emirates bought two THAAD batteries. In January 2022 its system intercepted ballistic missiles. The Missile Defense Agency calls this the first operational combat intercept by any nation.

## And the Middle East and Israel?

On 21 October 2023 the US Defense Secretary directed a THAAD battery to the Middle East. On 13 October 2024 the Defense Department announced a THAAD battery and its US crew for Israel.

Its job was to augment Israel’s air defence after Iran’s attacks that year.

## What did a study say about 2025?

One study estimated that 92 THAAD interceptors were used in the June 2025 conflict. It put the total supply at about 632. These are estimates, not official counts.

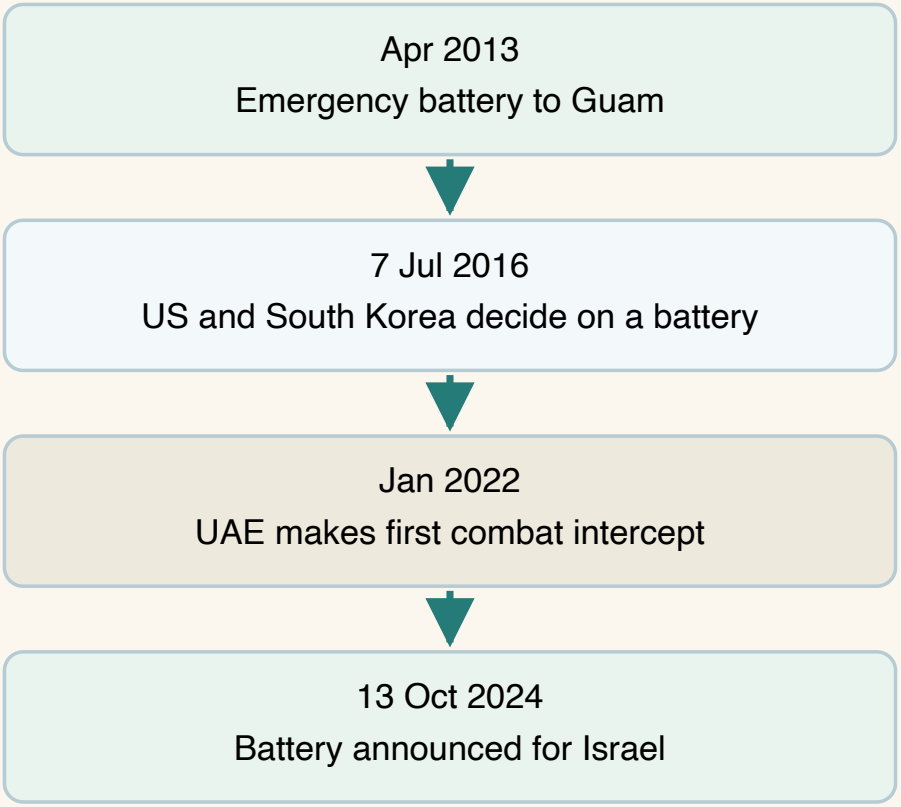



Illustration: Dates from the Congressional Research Service and the Missile Defense Agency.

**Quick check 4.** The first operational combat intercept by THAAD was made by the US Army. *(True or False?)* See answer ↓

Sources: congress.gov; mda.mil

## 6 Which missiles can THAAD meet?

THAAD is built for missiles that are short, medium or limited intermediate in range. This card gives the numbers.

## What are the range bands?

The Congressional Research Service lists three bands:

- **Short range:** up to 1,000 km.
- **Medium range:** 1,000 to 3,000 km.
- **Limited intermediate range:** 3,000 to 5,000 km.

THAAD meets them inside or outside the atmosphere, in the final phase of flight.

## Where does it sit among the defences?

It covers the middle tier of US ballistic missile defence. It defends a larger area than the Patriot system.

It complements the Patriot, the Navy's Aegis system and the Ground-based Midcourse Defense system.




Illustration: From the Congressional Research Service.

Sources: congress.gov

## 7 Is THAAD Israeli? Meet Arrow

The old exam option calls THAAD an “Israeli radar system”. It is neither Israeli nor only a radar. This card shows what Israel really uses.

### What is Israel’s own system?

Israel’s own long-range defence is the Arrow system. It includes the Arrow-2 and Arrow-3 interceptors.

The Israeli and US governments jointly developed it. Israel Aerospace Industries is the prime contractor.

### What else is in Israel’s defence?

Israel’s Missile Defense Organization leads several layers. They are Arrow, David’s Sling and Iron Dome. Israel’s Defense Ministry says Arrow-3 made the first operational interception in space.




An Arrow-3 interceptor launches in a flight test, 25 February 2013. Picture released by the US Missile Defense Agency, via Wikimedia Commons, Public domain. Resized from the original.

## Why is THAAD linked to Israel in the news?

In October 2024 a US THAAD battery was sent to Israel. It came with a crew of US military personnel. It was added to Israel's integrated air defence.

So the battery was American. It did not become an Israeli system.

Israel's defence layers

Arrow-2 and Arrow-3 (Israeli)

David's Sling

Iron Dome

US THAAD battery, US crew (2024)

Illustration: From the Israel Ministry of Defense and the Congressional Research Service.

> **Quick check 5.** The THAAD battery sent to Israel in October 2024 came with a US military crew. *(True or False?)* See answer ↓

Sources: mod.gov.il; congress.gov

## 8 Is THAAD Indian? Meet AD-1

Another exam option calls THAAD part of India's own anti-missile programme. India does have a programme. It is separate.

## What did DRDO test in 2022?

On 2 November 2022 DRDO carried out the maiden successful flight test of AD-1. The test was from APJ Abdul Kalam Island off the Odisha coast.

AD-1 is a Phase-II ballistic missile defence interceptor. The test had a large kill altitude bracket.

## What is AD-1 designed to do?

It is a long-range interceptor missile. It is designed to hit long-range ballistic missiles and aircraft, both low outside the atmosphere and inside it.

It runs on a two-stage solid motor. An indigenously developed control system guides it.



The AD-1 interceptor lifts off in its maiden flight test, 2 November 2022. Photo: Ministry of Defence, India, via Wikimedia Commons, GODL-India. Resized from the original.

## How does it differ from THAAD?

AD-1 is India’s own DRDO interceptor. THAAD is an American system developed by Lockheed Martin. Do not mix the two.

2 Nov 2022
Maiden successful flight test

Where
APJ Abdul Kalam Island, Odisha

What
Phase-II BMD interceptor, two-stage solid motor

Illustration: From the PIB release of 2 November 2022.

**Quick check 6.** AD-1 is a THAAD interceptor bought by India. *(True or False?)* See answer ↓

Sources: pib.gov.in; congress.gov

## What is great to know for tricky questions?

### 9 How do the three systems compare?

Three systems cause most of the confusion. This table sets them side by side.

| System | Country | Key facts from the sources |
|---|---|---|
| THAAD | United States | Lockheed Martin developed it. Hit-to-kill. Land-based. |
| Arrow-2 and Arrow-3 | Israel, with US help | Prime contractor: Israel Aerospace Industries. Arrow-3 made the first operational interception in space. |
| AD-1 | India | DRDO interceptor. Maiden successful test on 2 November 2022. |

The Patriot system is a separate system. THAAD defends a larger area than Patriot.

THAAD
United States

Arrow-2 and Arrow-3
Israel, with US help

AD-1
India, DRDO

Illustration: From the Congressional Research Service, the Israel Ministry of Defense and PIB.

Sources: congress.gov; mod.gov.il; pib.gov.in; mda.mil

## What did UPSC ask? Exam practice

### 10 What did UPSC ask, and what are the traps?

UPSC asked about THAAD in the 2018 prelims. This card shows the question, solves it and lists the traps.

### Which question did UPSC CSP 2018 ask?

### What is the answer?

The official answer key for Series A gives (c), an American anti-missile system.

- **(a) is wrong.** The Arrow system is Israel's. THAAD is American.
- **(b) is wrong.** India's programme has its own interceptor, AD-1.

- **(d) is wrong.** The South Korea deployment was a US and South Korean decision.

(a) Israeli radar system
Wrong

(b) India's anti-missile programme
Wrong

(c) American anti-missile system
Right

(d) Japan and South Korea
Wrong

Illustration: From the Missile Defense Agency and the official key.

## What are the traps?

1. **Wrong owner.** THAAD is American, not Israeli or Indian.
2. **Radar only.** The radar is one part of a battery. THAAD is a whole system with interceptors.
3. **Where it sits.** Location changes over time. Ownership does not.
4. **Spelling.** The official name uses the American spelling “Defense”.
5. **Counts.** The numbers of batteries and launchers differ between sources and years.

Sources: upsc.gov.in; congress.gov; mda.mil

## Review your 6 understanding checks

Review the feedback after each answer. The understanding-check score lasts for this page session.

Reset the checks when you want another attempt. This score is separate from the practice score below.

## Questions to think through

**Who developed THAAD?**

Lockheed Martin developed it, according to the Congressional Research Service. The Missile Defense Agency is responsible for its development within the US government.

**Does THAAD use an explosive warhead?**

No. It uses hit-to-kill technology. The impact itself destroys the incoming warhead.

**Why was a US battery sent to Israel if Israel has Arrow?**

The US battery was sent to augment Israel's integrated air defence in October 2024. Arrow remains Israel's own system.

**Is AD-1 the Indian version of THAAD?**

No. AD-1 is DRDO's own Phase-II interceptor. The sources do not link it to THAAD.

Sources: mda.mil; mod.gov.il; pib.gov.in; congress.gov

## Practice MCQs

**1. What is "Terminal High Altitude Area Defense (THAAD)", sometimes seen in the news?**

**A.** An Israeli radar system

**B.** India's indigenous anti-missile programme

**C.** A defence collaboration between Japan and South Korea

**D.** An American anti-missile system

See answer ↓

**2. Which company developed the THAAD system?**

**A.** Northrop Grumman

**B.** Lockheed Martin

**C.** Boeing

**D.** Raytheon

See answer ↓

**3. What does 'hit-to-kill' mean for a THAAD interceptor?**

**A.** It destroys the warhead by direct impact

**B.** It carries a nuclear warhead

**C.** It explodes near the target with a proximity fuse

**D.** It jams the guidance of the incoming missile

See answer ↓

**4. Where in South Korea is the THAAD battery stationed?**

**A.** Pyeongtaek

**B.** Incheon

**C.** Seongju

**D.** Busan

See answer ↓

**5. In January 2022, which country made the first operational combat intercept with a THAAD system?**

**A.** South Korea

**B.** Saudi Arabia

**C.** Israel

**D.** The United Arab Emirates

See answer ↓

**6. On 2 November 2022 DRDO flight-tested a ballistic missile defence interceptor from APJ Abdul Kalam Island. What was it called?**

**A.** AD-1

**B.** Prithvi

**C.** Akash

**D.** Astra

See answer ↓

# Answer Key

1. **D.** The correct answer is **An American anti-missile system**. THAAD is a land-based element of the US Missile Defense System, developed by Lockheed Martin. It destroys ballistic missiles in their final phase of flight by hitting them. It is not Israeli: Israel's own system is Arrow. It is not Indian: India's own interceptor is AD-1. The South Korea deployment was a decision of the US and South Korean governments. The official Series A answer key gives the same answer. ↑ Q1
2. **B.** The correct answer is Lockheed Martin. The Congressional Research Service says it developed THAAD, and that THAAD is manufactured in Troy, Alabama. The Missile Defense Agency is the US government body responsible for its development. The other companies are not named as THAAD's developer in the sources. ↑ Q2
3. **A.** The correct answer is that it destroys the warhead by direct impact. The Missile Defense Agency says THAAD uses hit-to-kill technology, whereby kinetic energy destroys the incoming warhead. The sources describe no blast near the target. ↑ Q3
4. **C.** The correct answer is Seongju. On 7 July 2016 the US and South Korean governments decided to deploy a THAAD battery. The Congressional Research Service says it is stationed at Seongju, about 130 miles south of Seoul. ↑ Q4
5. **D.** The correct answer is the United Arab Emirates. It bought two THAAD batteries. The Missile Defense Agency says its system intercepted ballistic missiles in January 2022, the first operational combat intercept by any nation. Saudi Arabia has signed foreign military sales cases for seven batteries. ↑ Q5
6. **A.** The correct answer is AD-1. The Ministry of Defence release calls it a Phase-II ballistic missile defence interceptor with a large kill altitude bracket. It is India's own DRDO interceptor. THAAD is an American system developed by Lockheed Martin. ↑ Q6

## Quick-check answers

1. **False.** THAAD is a land-based anti-ballistic-missile element of the US Missile Defense System. Lockheed Martin developed it. ↑ 1
2. **False.** THAAD uses hit-to-kill technology. The kinetic energy of the impact destroys the incoming warhead. ↑ 2

3. **True.** The Missile Defense Agency fact sheet gives up to eight interceptors per launcher. ↑ 3
4. **False.** The Missile Defense Agency says the UAE's system made it in January 2022, the first operational combat intercept by any nation. ↑ 4
5. **True.** The Defense Department announced a THAAD battery and associated crew of US military personnel for Israel. ↑ 5
6. **False.** AD-1 is a Phase-II ballistic missile defence interceptor tested by DRDO on 2 November 2022. THAAD is an American system. ↑ 6

**Curated by Arsalan Zuberi · mcqquestion.com**

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