Lab Week # 5 (Microsoft Excel Lab Work) (Section C)

WORK TO BE COMPLETED IN LAB

The following is the data of all AirForce Weapons which Israeli Defence Force has with Air to Air Missiles, Air to Surface Missiles & Unguided Bombs & Rockets which are of course used on all the Fighter Jets which Pakistan Possesses. The Data is given with its name, Range in kilometers, Technology used, Place of Origin (local or imported), and Possible Quantity in Inventory.

- You have to make 3 Sheets (Landscape Mode) in **Microsoft Excel** for all the Inventory with each Sheet Pertaining to Air to Air Missiles, Air to Surface & Unguided Bombs & Rockets.
- Each Sheet will have a Proper heading and Columns as below
  - (i) Name of Missile
  - (j) Range in km
  - (k) Range in miles (use Excel Calculator Formula to Calculate that from cell (b)
  - (l) Place of Origin Country
  - (m) Technology Used (Homing IR, Homing AESA, Glide or Laser)
  - (n) Next Make as many Columns as Jet fighters totally available in data given and write YES or NO which it supports i.e. F-35I, F-16, F-15I or Rafale etc.
  - (o) Quantity (Estimated)
  - (p) Any Text or Details to be Added
- The Whole Data has to be managed in tabular Form & Proper cell Data type has to be allocated such as String or Integer Data Type
- At the End of Each Sheet, make a Total of all Air to Air missiles, Air to Surface & Rockets Israel has. *(Use Cell formulas for this)*
- Also Find out the Percentage of Locally produced Inventory as compared to Imported Missiles with respect to Total Quantity of weapons for each type of Weapon i.e. Air to Air, Air to Surface or Unguided Bombs. *(Use Cell formulas for this)*
- Make all Tables on all sheets with Lines (Margins) and Proper Bold and Center Aligned Text in all Cells. The Data has to be managed in only 3 Sheets (3 Pages). Use Text Wrap if Cell Size is in-adequate.

Please Make Sure, to write down the Name & Roll No in Footer Section of Each Sheet

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Israel Air Force Air-Launched Weapons Inventory (as of October 2025)

Missile	Origin/Type	Range (km)	Platforms	Notes/Estimated Inventory
AIM-120C-7/8 AMRAAM	USA (Active Radar Homing)	105-120	F-16I, F-15I/A, F-35I	~1,000+; core BVR; 2024 FMS adds 200+ AIM-120D-3 variants for extended range.
AIM-9X Sidewinder	USA (IR Homing)	35+	All fighters	~800+; high off-boresight; helmet-cued; ongoing production/replenishment.
Derby (Altan)	Israel (Active Radar Homing)	50-100	F-16I, F-35I, UAVs	~500+; Rafael BVRAAM; export success; integrated on AESA radars.
Python-5	Israel (IR Homing)	20-40	F-15I, F-16I, F-35I	~600+; Rafael high-agility; lock-on-after-launch; combat-proven vs. Syrian MiGs.
I-Derby ER	Israel (Active Radar Homing)	100+	F-35I (planned), F-16I	~200+; extended-range Derby; in trials for 2026 IOC.
Stunner (David's Sling Air-Launched)	Israel/USA (Dual-Mode)	40-300	F-35I (developmental)	~100+; air-launched variant; anti-ballistic/BVR hybrid; limited deployment.

Air-to-Surface Missiles and Guided Bombs Precision strikes dominate, with standoff ranges mitigating risks in contested airspace. Indigenous supersonic ballistic missiles (e.g., Rampage) were key in 2025 Iran strikes. U.S. JDAM kits (17,479 approved Feb 2025) convert unguided bombs; Israeli Spice/ROCKS enable deep-penetration.

Weapon	Origin/Type	Range (km)	Platforms	Notes/Estimated Inventory
Rampage	Israel (Supersonic ALBM)	150-300	F-16I, F-15I, F-35I	~300+; IAI; used in 2024-2025 Iran/Yemen strikes; low-observable, anti-radiation.
ROCKS	Israel (Supersonic ASM)	300+	F-35I, F-15I	~150+; Rafael; air-launched Golden Horizon variant; high-speed for SEAD/HVTs.
Air LORA	Israel (Ballistic Missile)	280+	F-16I, F-35I	~200+; IAI; precision ground-attack; tested 2024; complements Rampage.

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Delilah	Israel (Loitering Cruise Missile)	250+	F-16I, UAVs	~400+; Rafael; man-in-the-loop; anti-ship/ground; extended loiter for ISR/strike.
Popeye (Have Nap)	Israel (Turbojet Cruise Missile)	80-350	F-15I, F-16I, Dolphin subs (air-launched)	~200+; Rafael; nuclear-capable variant (Turbo SLCM); standoff for deep strikes.
AGM-158 JASSM-ER	USA (Stealth Cruise Missile)	370+	F-15I, F-35I (planned)	~100+; U.S. FMS; low-observable; requested 2025 for Iran-range penetration.
Hellfire AGM-114R	USA (Laser/GPS-guided ASM)	8-11	AH-64, drones	~3,000+; 2025 FMS adds 1,000+; anti-personnel/armor; urban ops staple.
GBU-39 SDB I/II	USA (Small Diameter Bomb)	110 (glide)	F-16I, F-35I	~2,600+; 2025 FMS replenishment; precision for clustered targets; low collateral.
GBU-31/38 JDAM	USA (GPS-guided)	24 (glide)	All fighters	~14,000+ kits (2009-2025 total); 17,479 more approved 2025; converts Mk-84/83.
Spice-1000/2000	Israel (EO/GPS-guided Glide Bomb)	60-100	F-16I, F-15I, F-35I	~1,500+; Rafael; autonomous target recognition; used extensively in Gaza 2023-2025.
MPR-500	Israel (Penetrator Bomb)	10-20	F-16I, F-35I	~500+; Elbit; bunker-buster; 2025 domestic production ramp-up.
Blue Sparrow	Israel (Target Drone/Missile Simulator)	50+	Testing platforms	N/A; Rafael; for training; not combat.

WORK TO BE COMPLETED IN LAB

Unguided Bombs and Rockets (Selected) Legacy free-fall munitions persist for saturation/high-volume strikes, often paired with glide kits. High attrition in 2023-2025 ops (~29,100 U.S.-sourced guided variants since 2009).

Weapon	Type	Weight (kg)	Platforms	Notes/Estimated Inventory
Mk-82	General Purpose Bomb	227	All fighters	~5,000+; baseline for Spice/JDAM; depleted/replenished via U.S. aid.
Mk-83	General Purpose Bomb	454	F-15I, F-16I	~3,000+; mid-weight; common in urban ops.
Mk-84	General Purpose Bomb	907	F-15I, F-35I	~6,500+ (U.S. transfers 2009-2025); heavy penetrator.
APKWS (Hydra 70 guided)	Laser-guided Rocket	13 (per rocket)	AH-64, F-16I	~1,000+ pods; low-cost precision; 2025 FMS boost.
LAU-131 Pods (Unguided)	2.75" Rockets	70 (pod)	AH-64, F-16I	~2,000+ rounds; anti-personnel; multipurpose.

Key Trends and Capabilities

- **Indigenous Edge**: ~60% produced locally (e.g., Rafael/IAI facilities ramped up post-2023); Elbit's $275M contract (Jan 2025) adds output for JDAM/Spice kits.
- **Integration**: F-35I's CNI pod enables internal carriage of standoff weapons; networked with Eitam AEW&C for cooperative targeting.
- **Nuclear Dimension**: Popeye/Rampage variants support ~90-warhead arsenal (SIPRI 2025); dual-capable F-16I/F-35I squadrons at Nevatim/Hatzor.
- **Recent Acquisitions**: 2025 U.S. FMS ($8B proposed) counters depletion (~25% munitions used in Gaza/Lebanon/Iran ops); JASSM-ER trials for 2026.
- **Limitations**: High sortie rates (e.g., 2,000+ strikes/week in 2024) strain stockpiles; U.S. dependency for volume replenishment; focus on ALBMs reduces pilot exposure.