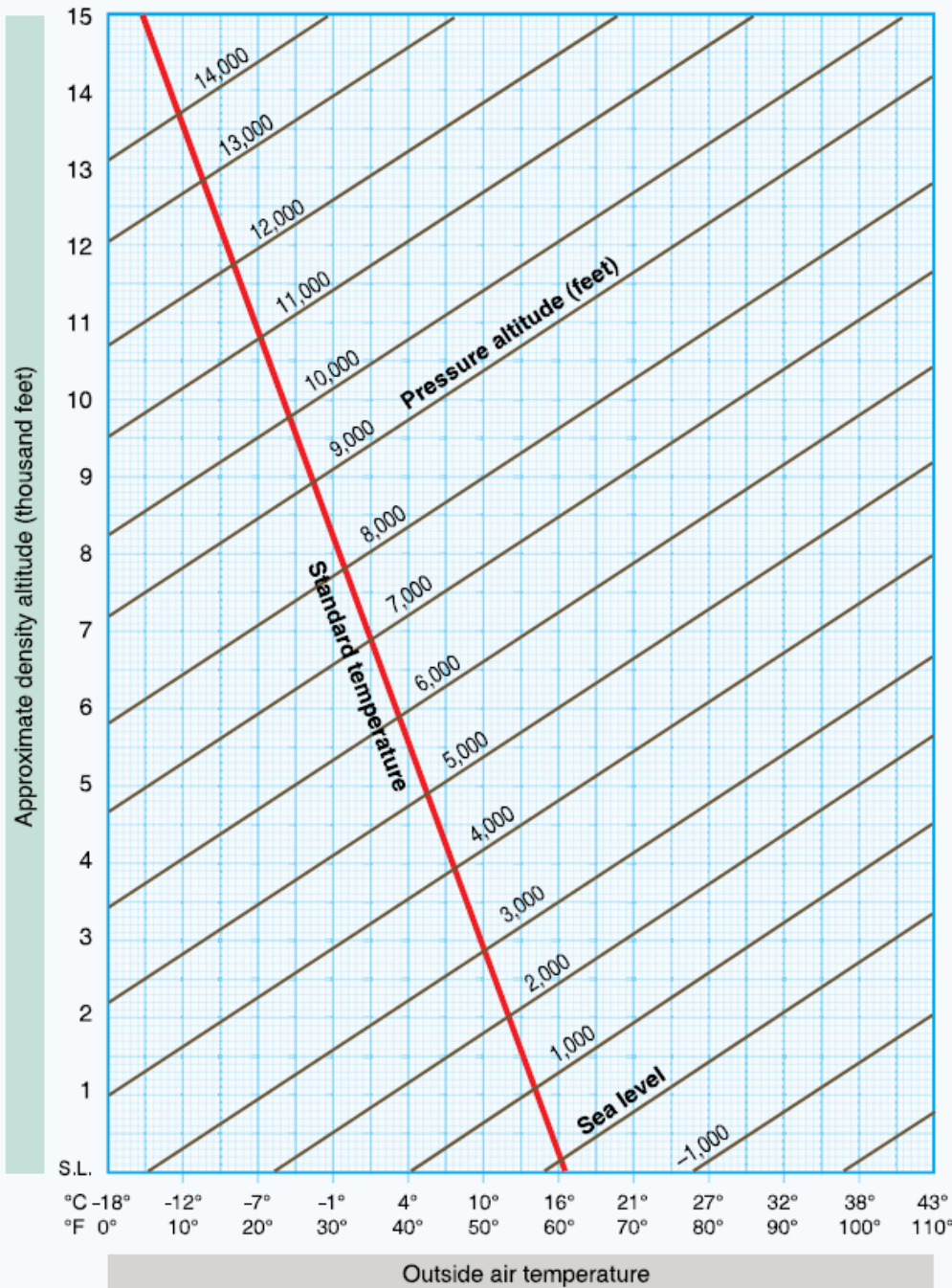


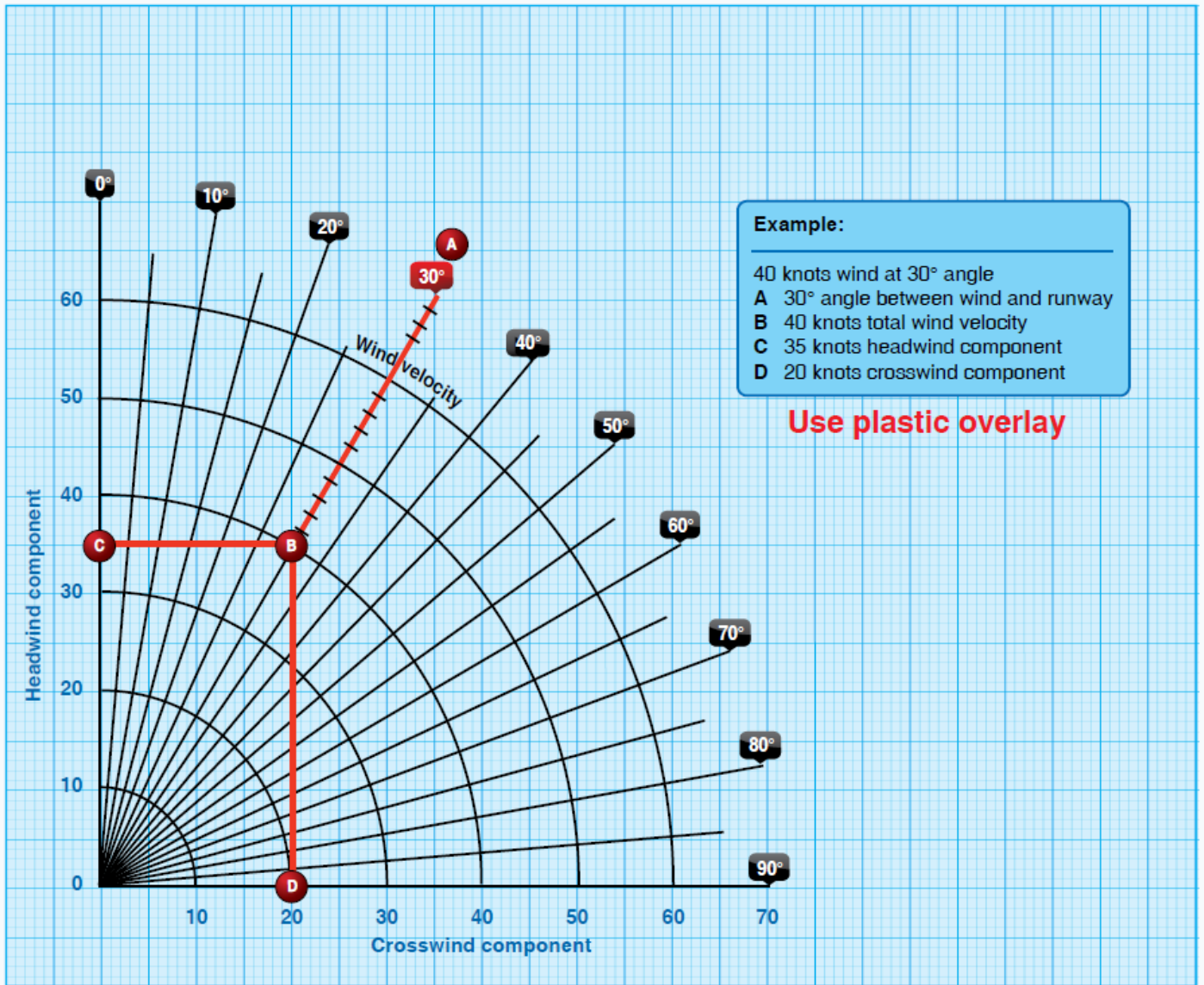
- Determine the density altitude for these conditions:
 Altimeter setting 29.25 "Hg
 Runway temperature +81 °F
 Airport elevation 5,250 feet MSL
- What is the effect of a temperature increase from 30 °F to 50 °F on the density altitude if the pressure altitude remains at 3,000 feet MSL?

DENSITY ALTITUDE CHART



Altimeter setting ("Hg)	Pressure altitude conversion factor
28,0	1,824
28,1	1,727
28,2	1,630
28,3	1,533
28,4	1,436
28,5	1,340
28,6	1,244
28,7	1,148
28,8	1,053
28,9	957
29,0	863
29,1	768
29,2	673
29,3	579
29,4	485
29,5	392
29,6	298
29,7	205
29,8	112
29,9	20
29,92	0
30,0	-73
30,1	-165
30,2	-257
30,3	-348
30,4	-440
30,5	-531
30,6	-622
30,7	-712
30,8	-803
30,9	-893
31,0	-983

3. Determine the maximum total wind velocity for a 45° crosswind if the maximum crosswind component for the airplane is 25 knots.
4. What is the headwind component for a landing on Runway 18 if the tower reports the wind as 220° at 30 knots?



5. Determine the total distance required to land over a 50 foot obstacle.

Pressure altitude: 3,750 feet

Headwind: 12 knots

Temperature: standard

Landing distance										Flaps lowered to 40° – Power off Hard surface runway – Zero wind
Gross weight lb	Approach speed, IAS, MPH	At sea level & 59 °F		At 2,500 feet & 50 °F		At 5,000 feet & 41 °F		At 7,500 feet & 32 °F		
		Ground roll	Total to clear 50 feet OBS	Ground roll	Total to clear 50 feet OBS	Ground roll	Total to clear 50 feet OBS	Ground roll	Total to clear 50 feet OBS	
1,600	60	445	1,075	470	1,135	495	1,195	520	1,255	

NOTE:

1. Decrease the distances shown by 10% for each 4 knots of headwind.
2. Increase the distance by 10% for each 60 °F temperature increase above standard.
3. For operation on a dry, grass runway, increase distance (both "ground roll" and "total to clear 50 feet obstacle") by 20% of the "total to clear 50 feet obstacle" figure.

6. Determine the total distance required to land.

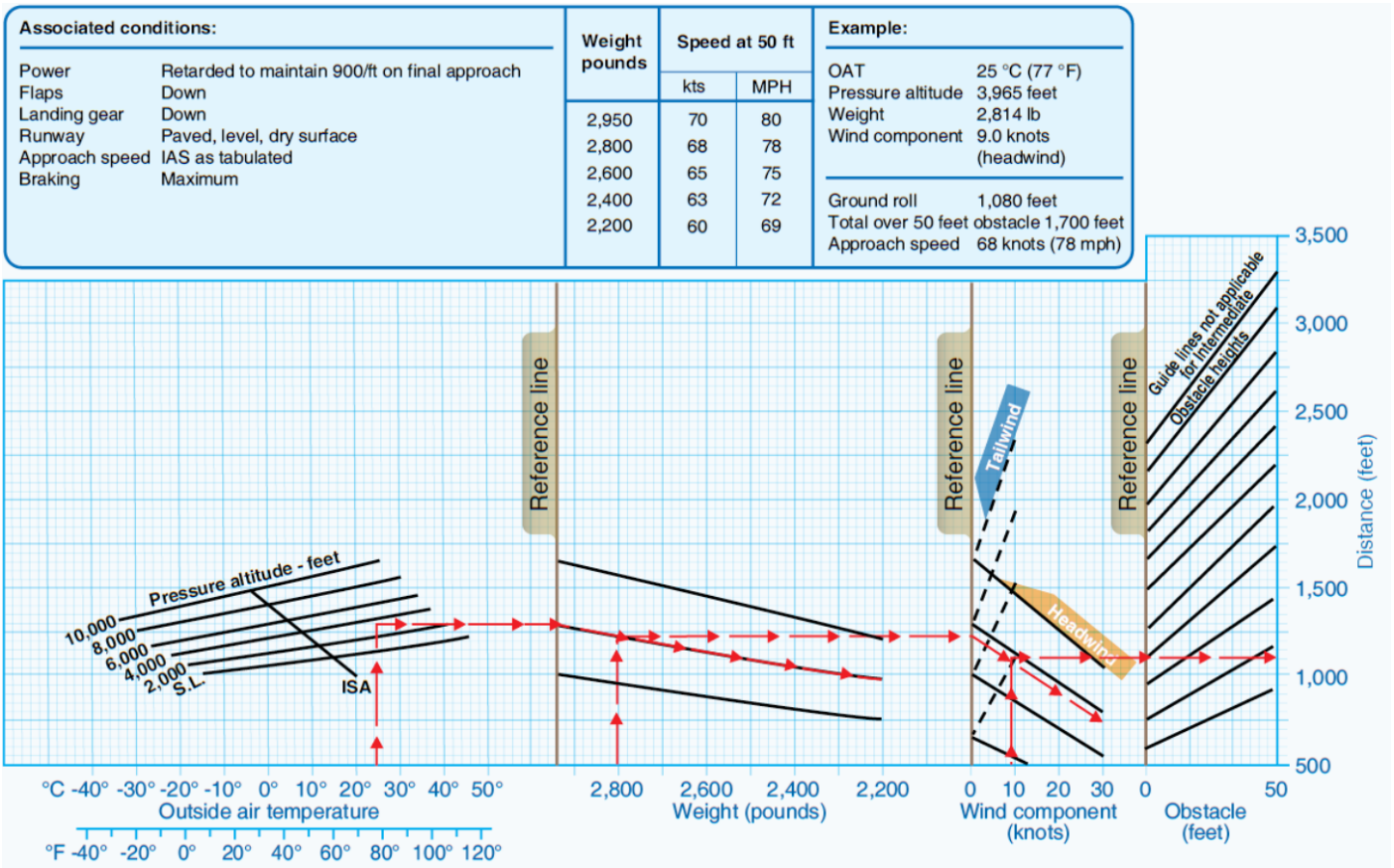
OAT: 32 °F

Pressure altitude: 8,000 feet

Weight: 2,600 lbs

Headwind component: 20 knots

Obstacle: 50 feet



7. Determine the approximate ground roll distance required for takeoff.

OAT: 90 °F

Pressure altitude: 2,000 feet

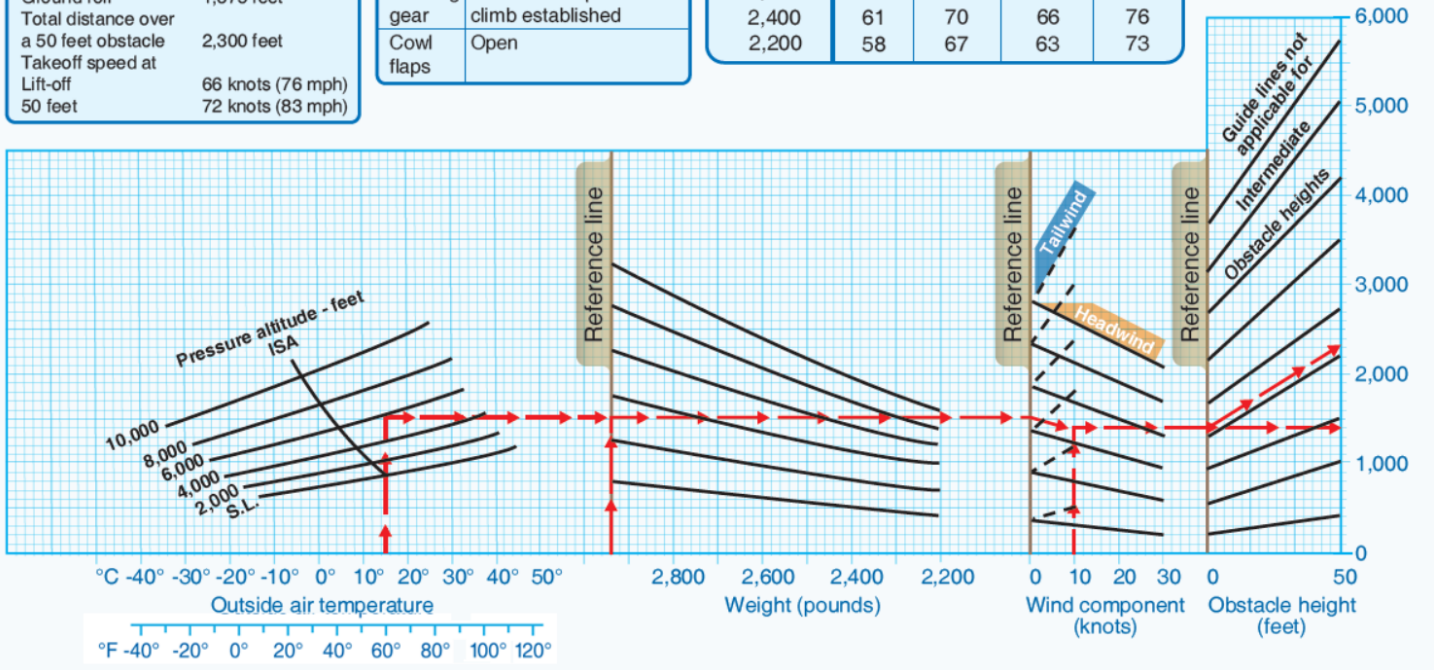
Takeoff weight: 2,500 lb

Headwind component: 20 knots

Example:	
OAT	15 °C (59 °F)
Pressure altitude	5,650 feet
Takeoff weight	2,950 lb
Headwind comp.	9.0 knots
<hr/>	
Ground roll	1,375 feet
Total distance over a 50 feet obstacle	2,300 feet
Takeoff speed at Lift-off	66 knots (76 mph)
50 feet	72 knots (83 mph)

Associated conditions	
Power	Full throttle 2,600 rpm
Mixture	Lean to appropriate fuel pressure
Flaps	Up
Landing gear	Retract after positive climb established
Cowl flaps	Open

Weight pounds	Takeoff speed			
	Lift-off		50 ft	
	kts	MPH	kts	MPH
2,950	66	76	72	83
2,800	64	74	70	81
2,600	63	72	68	78
2,400	61	70	66	76
2,200	58	67	63	73



8. What true airspeed should a pilot expect with 65 percent maximum continuous power at 9,500 feet with a temperature of 36 °F below standard?

Cruise power settings
65% Maximum continuous power (or full throttle 2,800 pounds)

Press ALT.	ISA -20 °C (-36 °F)								Standard day (ISA)								ISA +20 °C (+36 °F)										
	IOAT		Engine speed	MAN. press		Fuel flow per engine		TAS		IOAT		Engine speed	MAN. press		Fuel flow per engine		TAS		IOAT		Engine speed	MAN. press		Fuel flow per engine		TAS	
	Feet	°F	°C	RPM	IN HG	PSI	GPH	KTS	MPH	°F	°C	RPM	IN HG	PSI	GPH	KTS	MPH	°F	°C	RPM	IN HG	PSI	GPH	KTS	MPH		
SL	27	-3	2,450	20.7	6.6	11.5	147	169	63	17	2,450	21.2	6.6	11.5	150	173	99	37	2,450	21.8	6.6	11.5	153	176			
2,000	19	-7	2,450	20.4	6.6	11.5	149	171	55	13	2,450	21.0	6.6	11.5	153	176	91	33	2,450	21.5	6.6	11.5	156	180			
4,000	12	-11	2,450	20.1	6.6	11.5	152	175	48	9	2,450	20.7	6.6	11.5	156	180	84	29	2,450	21.3	6.6	11.5	159	183			
6,000	5	-15	2,450	19.8	6.6	11.5	155	178	41	5	2,450	20.4	6.6	11.5	158	182	79	26	2,450	21.0	6.6	11.5	161	185			
8,000	-2	-19	2,450	19.5	6.6	11.5	157	181	36	2	2,450	20.2	6.6	11.5	161	185	72	22	2,450	20.8	6.6	11.5	164	189			
10,000	-8	-22	2,450	19.2	6.6	11.5	160	184	28	-2	2,450	19.9	6.6	11.5	163	188	64	18	2,450	20.3	6.5	11.4	166	191			
12,000	-15	-26	2,450	18.8	6.4	11.5	162	186	21	-6	2,450	18.8	6.1	10.9	163	188	57	14	2,450	18.8	5.9	10.6	163	188			
14,000	-22	-30	2,450	17.4	5.8	10.5	159	183	14	-10	2,450	17.4	5.6	10.1	160	184	50	10	2,450	17.4	5.4	9.8	160	184			
16,000	-29	-34	2,450	16.1	5.3	9.7	156	180	7	-14	2,450	16.1	5.1	9.4	156	180	43	6	2,450	16.1	4.9	9.1	155	178			

Note: 1. Full throttle manifold pressure settings are approximate.
2. Shaded area represents operation with full throttle.

