

	Quiz #4 (60 points)	(% of max)
101	25	41.7%
102		
104		
105		
106		
109		
110	37	61.7%
111		
113	22	36.7%
115	39	65.0%
116	39.5	65.8%
117	46	76.7%
118	20	33.3%
119	24	40.0%
120	26	43.3%
121	23	38.3%
123	42	70.0%
124	32	53.3%
125	35	58.3%
126	52	86.7%
128	49	81.7%
129	33	55.0%
130	16	26.7%
132	36	60.0%
133	43.5	72.5%
134	10	16.7%
135	60	100.0%
136	17	28.3%
137	38	63.3%
138	35	58.3%
139	25	41.7%
140	46	76.7%
Average	33.5	55.8%
Stdev	12.2	20.4%

Long Answer Question Grading Criteria:

Question #6

J – (8 points) totally correct. I accepted either 1 or 2 significant figures

P – (6 points) Needs more explanation of what physical model is applied

Y – (5 points) Correctly identifies momentum conservation will apply, then makes some major errors in reasoning. Does not compute numerical answer.

- K – (3 points) incorrectly used the total speed of the block for momentum conservation (only the horizontal component of the momentum is conserved)
- N – (3 points) correctly found velocity in horizontal direction. Incorrectly used momentum conservation to find speed in vertical direction
- N1 – (2.5 points) same as N, but was unclear about the direction of the velocity of the wedge
- N2 – (2 points) same as N1, but did not include units
- G – (2 points) some progress towards solution made
- B – (0 points) found the speed of the block instead of the wedge
- V – (0 points) Major errors in reasoning. Little progress towards correct solution

Question #7

- J – (8 points) totally correct. Used conservation of momentum in both directions to get final speed of the second ball.
- M – (5 points) incomplete solution, but correct physics represented
- L – (5 points) does not realize the total momentum on the y-direction is zero
- A – (4 points) physics reasoning mostly correct, but there is an error in reasoning.
- Q – (4 points) uses the final speed of the first ball without making an argument for the value of the speed
- X – (2 points) uses conservation of momentum with momenta as scalars, not vectors
- C – (2 points) correctly states momentum conservation is involved, but makes little progress
- Z – (2 points) solves for the final speed of the wrong ball

Question #8

- J – (8 points) totally correct
- J1 – (7 points) mostly correct. Used a $\eta_k mg$ model for friction incorrectly to calculate a η_k , but then applied it to find that the friction force is $0.5ma$
- S – (6 points) error calculating torque. Correct method for calculating the applied force
- D – (4 points) Incorrectly identifies the applied force as causing a torque. Correct method for calculating friction force
- U – (4 points) Incorrectly identified the applied force as being equal to the product of mass and acceleration. Correct method for finding torque.
- Y – (3 points) Correctly writes down Newton's 2nd law, but little other work
- E – (3 points) Incorrectly identifies the applied force as causing a torque, but unable to calculate friction force
- R – (3 points) Incorrectly identifies the friction force as being equal to the product of mass and acceleration. Other minor mistake with calculating torque
- P – (2 points) Same as E but makes error in calculating torque
- W – (2 points) Incorrectly identified the applied force as being equal to the product of mass and acceleration. Incorrectly or unable to calculate the friction force
- H – (0 points) Little or no progress

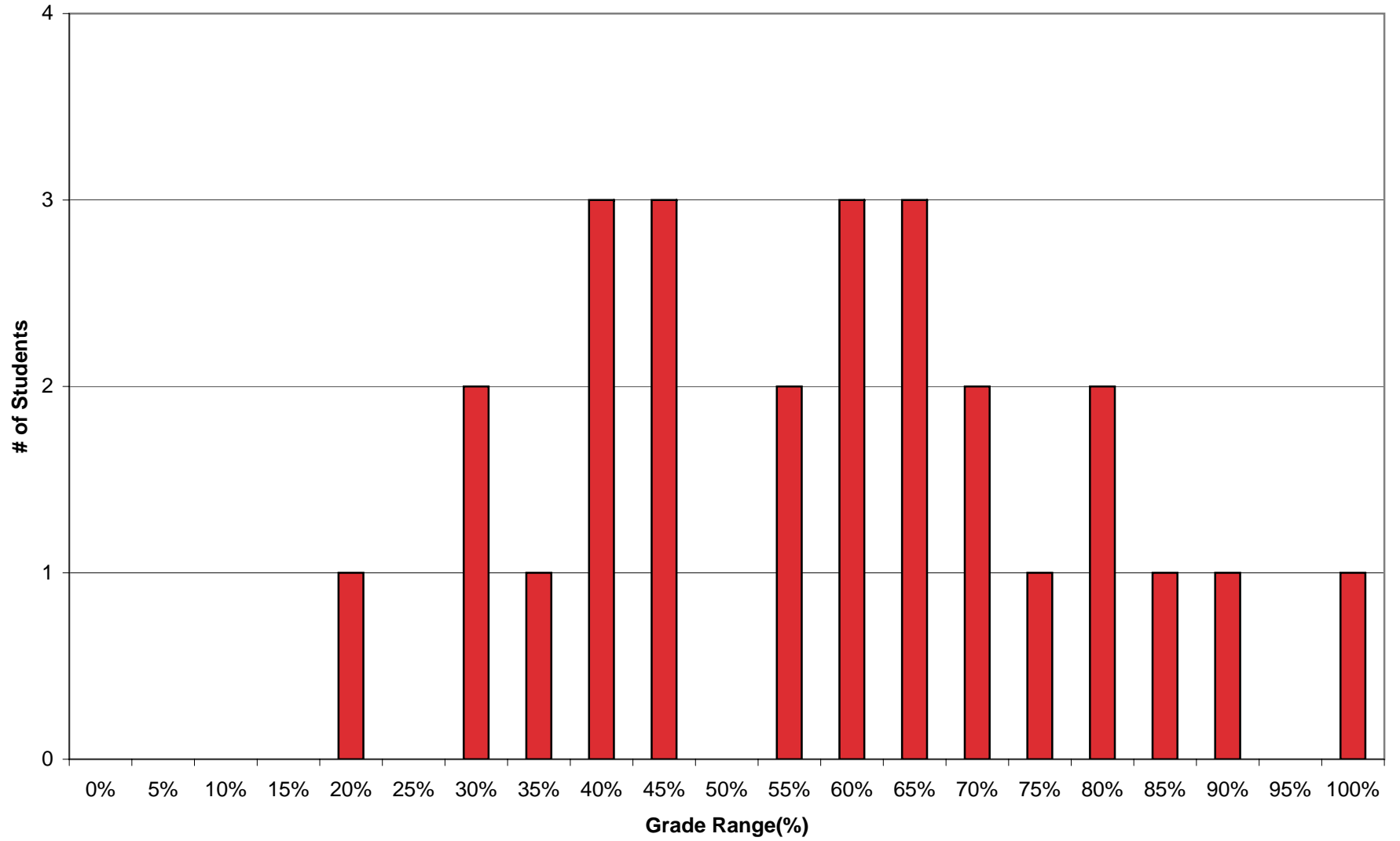
Question #9

- J – (8 points) totally correct answer.
- E – (6 points) used momentum conservation, but got the direction of the angular momentum wrong.
- G – (4 points) used momentum conservation, but tried to write moment of inertia in terms of mass and radius, which led to errors
- M – (2 points) stated momentum was conserved, but proceeded with energy conservation equation
- I – (2 points) used momentum conservation, but used mass instead of moment of inertia
- V – (1 point) used energy conservation instead of momentum conservation (energy not conserved here because this is like a totally inelastic collision)
- B – (0 points) little or no work towards solution

Question #10

- J – (8 points) totally correct answer. Found speed using either energy methods or force considerations
- F – (7 points) Made incorrect assumptions about the moment of inertia
- Q – (6 points) fails to relate angular speed with linear speed
- C – (5 points) did not take into account the acceleration of the block when considering the tension in the rope
- W – (3 points) omits an energy from the problem, either rotational kinetic or translational kinetic
- Z – (3 points) Made incorrect assumptions about the moment of inertia and mixed angular and linear quantities in an incorrect way
- H – (2 points) recognizes energy is conserved, and write down correct mathematical relation, but makes no further progress
- P – (1 point) Incorrectly calculated torque. Set torque equal to gravitational potential energy
- B – (0 points) little or no progress made

Quiz 4 Grades



Multiple Choice Errors

